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Problems in Minor Traumatic Surgery With Special Reference to the Hand

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During my medical career I have made and heard many criticisms of our medical colleges for utilizing so little time on the minor and more frequent medical problems while devoting week upon week to conditions infrequently seen in general practice such as the Leukemias and brain tumors. As a consequence the physician often finds himself confronted with that which to him is a major problem which rightly belongs to the minor category. By the same token our medical journals and Society meetings are filled with essays and papers on highly scientific and rare conditions which to the average physician mean little or nothing. I have therefore, with your kind indulgence, decided to devote the twenty minutes allotted me, to the common conditions that make up 90% in numbers of the average Industrial Surgeon's practice.

The relations of the Industrial Surgeon to his patient in manners, treatment or technique should in all cases be that of any surgeon toward his private patients, avoiding haughtiness, indifference and carelessness, accepting cheerfully the obligation entailed, and using on each case the proper equipment, up-to-date technique and scrupulous courtesy.

Careful records of even the most trivial injury should be kept in triplicate; one for the Insurance Company or Industrial Commission; one for the employer; and another for ones own files. Records are important for various reasons, principally in case of litigation. In the estimation of disability one should not be too optimistic as to the outcome, but at the same time it is ill-advised to give the patient an exaggerated idea of the amount of compensation he should receive.

X-ray photographs should be made of all cases where there is the least suspicion of bone injury. It establishes the presence of pathology of the bone and is an invaluable guide to the treatment of the traumatic condition. From a clear early picture the surgeon can form an opinion as to just how seriously a trauma has affected any pre-existing pathological condition of bone, and naturally this would have considerable bearing on the compensation justly due. X-ray will demonstrate the presence of some foreign bodies if the density is sufficient. Films should be made in both the antero-posterior and the lateral positions. I have seen quite a number of linear fractures overlooked because only one view was taken; and numbers of cases of fractures missed where they were not suspected, only possible to diagnose with a good clear X-ray picture. These sins of omission might and often do prove serious.

In a survey of 500 cases of injuries during the past 13 months 332 of which were Industrial and 168 results of Automobile and

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other accidents, we have deduced the following facts.

Of the Industrial group 22 of 332 or approximately 7% were fractures of various types, one half of which were compounded. Of the various injuries of this industrial group the hands suffered most with 35%, the entire lower extremity 21%, the eye 14%, while the face suffered least with 2% casualties.

On the hand casualties 108 or 84% were minor contusions, burns, simple lacerations, avulsion of finger nails, punctured wounds and foreign bodies; while the remainder 8 of 9 compound fractures and 2 of 6 infected cellulitises totalling 10 of 129 hand cases or 8% resulted in the loss of a part or one or more fingers.

When automobile and other traumas are added to the totals the percentage of fractures increased tremenduously from 7% to 20%. In the auto cases of 168, 79 or nearly half suffered fractures either simple or compounded, while 89 or over one-half escaped with only lacerations and minor bruises. Of the 332 cases there developed 4 major operations viz; one exploratory laparotomy for internal injuries, and 3 hernias; 10 amputations of fingers, 6 incisions and drainage for cellulitis, or a total of 20 (6%), leaving 94% of the series as cases coming under the minor category.

The first principle of Industrial Surgery is to design treatment so that the patient will lose the least possible time from work and also obtain the best possible functional results. Both of these factors have tremendous bearing not only upon the compensation involved but also on the future welfare and ability of the patient to find work and keep it.

All the care that one can exercise in first aid is prophylaxis against grave infections. Practically all injured cases come to the office with dirt, grease and grime thoroughly ground into and around the wound. Prompt and rapid healing is the reward for thoroughly cleansing with green soap and water, and removing all debris, loose and macerated tissue. A sterile sponge is placed in the wound to protect from further infection, and the surrounding skin is thoroughly scrubbed. Merthiolate or iodine is applied to skin widely around wound but not in it. We do not favor the pouring of strong disinfectants like iodine into the wound. We feel that this type of drug does more harm than good by further lowering the vitality of the already injured tissues. We prefer to irrigate thoroughly with saline, mild Dakins or chlorazene solution which cleans out clots and foreign material, disinfects and stimulates the tissues to more prompt healing. Edges of the wound should be trimmed clean and smooth, bleeders tied with fine catgut to prevent oozing and hematoma. Cut nerves and tendons should be sutured and restoration of function will usually result when not handicapped by infection. Where amputations are necessary nerves and tendons should be pulled out, cut as short as possible, and allowed to retract out of sight. In case of nerves this prevents the nerve end from being enmeshed in scar tissue and a possible neuralgia from nerve pressure and irritation. As to tendons the loose ends are apt to slough on account of low vitality and poor blood supply and in the healing process serves no useful purpose. It is our practice to use removable silkwormgut, horsehair, or fine dermal suture for skin rather than the absorbable catgut which places more labor on the healing mechanism of the skin in absorbing it. As a result we feel that we have fewer stitch infections. Sterile dressings are applied, and the wound is inspected daily. If in 24 to 48 hours evidence of infection appears with redness and swelling or pain, a stitch or so is removed, edges of the wound carefully separated and drainage instituted. Infection travels along the line of least resistance and its early detection and the adoption of the aforementioned measure will often convert a would be prolonged discharging wound into one that suppurates little and heals rapidly. Stitches are usually removed in from 6 to 7 days or even longer. If there be too much tension, the circulation disturbed and we fear sloughing, it is better to remove stitches and be satisfied with a wide scar or even a resort to skin grafting to fill in the gap.

The grave infections with which we are often confronted as a result of injuries to the hand consist of fascial space abscess, tenosynovitis, osteomyelitis, lymphangitis, septic arthritis and even septicemia. These infections spread in one of three ways, along specific routes depend-

ing upon the initial lesion.

1. Lymphatic Channels.
2. Fascial Spaces.
3. Synovial Sheath

Lymphangitis: Infection may travel via the lymphatics. This system consists of a network of channels that arise at the tips, converge to the side of the fingers along the collateral artery and connect with those of the contiguous finger to form trunklets. These in turn converge at the wrist forming larger and fewer trunks, which divide into a dorsal and palmar group. The majority of these collectors terminate in the humeral chain of axillary glands with the exception of 2 or 3 from the little and ring fingers which terminate in the epitrochlear glands.

Clinically, infection of these tracts produce lymphangitis which presents red streaks up the arm and lymphadenitis in the elbow or axilla, with all the concomitant symptoms.

There is an absence of pain on extension of fingers and no tenderness over the tendons or fascial space, but a rapid increase of the swelling and edema of the entire hand and sometimes the forearm, with the greatest swelling and tenderness upon the dorsum. Bulging of the palm is absent and the patient is often prostrated, with headache, insomnia, thirst, restlessness and fever.

Cellulitis: Anatomically, the hand contains 5 Fascial spaces which may be the seat of primary infection, but usually secondary to lymphatic or tendon sheath infection arising from trauma. The size of a trauma does not always determine its gravity, death has at times occurred from a mere pinprick.

These spaces are:

1. Midpalmer
2. Thenar
3. Hypothenar—separted from rest of the hand and of minor surgical importance.
4. Dorsal subcutaneous
5. Dorsal subaponeurotic—both deriving infection from the dorsum, other than by direct implantation which is common to all these spaces.

The Midpalmer space receives pus from the

1. Middle ring and Little fingers.
2. Ulnar Bursa
3. Infections in Lumbrical canals between heads of the Metacarpals
4. Osteomyelitis middle and ring metacarpals
5. Thenar space extension

The thenar space receives infection from

1. Index finger
2. Thumb
3. Osteomyelitis index and thumb metacarpals
4. Midpalmar space extension.

We therefore find that the Midpalmar and the Thenar spaces constitute from a surgical standpoint the most important spaces of the hand since initial infection from any of the five fingers may eventually find one or the other or both of these areas.

If the infection is not checked it will then travel up the forearm by:

1. Extension along connective tissue spaces and tendons.

2. Rupture of ulna or radial bursa beneath annular ligament of wrist. Generally speaking superficial infections will often rupture through the web between infected and adjoining finger, particularly of the thumb, less so of the ring and little fingers, and rarely so with the index and middle fingers.

Index and middle finger infections are more likely to spread via lumbrical muscles to infect the midpalmar space, but of course can spread over similar routes from any finger. The proximal interphalangeal joint is more often involved than the Metacarpophalangeal.

In the deeper infections where tendon sheaths are involved we have a more serious condition and prognosis. From the thumb and index finger usually the thenar space is involved.

From the middle, ring and little finger we may expect infection to travel via tendon sheaths to the midpalmar space, thence to the thenar space, or the ulna bursa, thence to the forearm beneath the flexor profundis and pronator quadratus when it lies on the interosseus membrane.

Once the pus has involved the midpalmar space we note a loss of the concavity with bulging of the palm and exquisite tenderness limited to the space. The area may be red but is usually pallid and flexion of the finger

is present due to the juxtaposition or involvement of the flexor tendons. An accompanying swelling of the thenar space is usually due to edema.

When the thenar space is involved the swelling balloons up out of proportion to that of the palm, and the metacarpal of the thumb appears pushed away from the hand.

It is well to know that while edema is almost universal on the dorsum and swelling appears more severe than of the palm it is extremely uncommon to find pus in the dorsum and incisions for evacuation of pus and relief of symptoms must be made in the palm.

TENOSYNOVITIS:

The three cardinal symptoms of Tenosynovitis are:

1. Flexion of the finger.
2. Severe pain on extension of the fingers particularly at the base.
3. Marked tenderness over the sheath of the tendon.

Beside this there is swelling of the entire finger and hand, front and back as well as pain and tenderness of a less degree over the entire hand. After rupture of the sheath which sometimes happens the physician may err in belief that it is better, because the tenderness and pain have subsided. Extensions from the little finger are less common but can occur, and like the others, extend, in this case to the ulnar bursae, the fascial spaces, and joints, or to other tendons.

General Principles of Treatment

After the initial treatment of which we have spoken the wound should be carefully watched to detect the first evidence of infection. Should it appear removal of original stitches with further incision and drainage along standard lines should be instituted at once. Early attention will prevent many of the adhesions and contractures which will certainly develop if treatment is delayed. The common habit of pressing and squeezing a wound to express pus is to be condemmed. Plugs of necrotic material which dam up drainage should be removed with forceps and suction used to evacuate pus. Squeezing disseminates infection and bruises surrounding tissues or may even produce systemic infection or dislodge septic thrombi.

Incisions should be adequate, too large rather than too small and as numerous as necessary to allow free evacuation of pus. If too small the opening clogs with necrotic plugs and dams up drainage. Incise longitudinally in region where local signs are most pronounced. Where tenosynovitis is present, incise sheath, in the palm directly over sheath; if in fingers on the side that is swelled most or on both sides if necessary. Incise each phalanx except distal, and if tissue appears to close up opening connect incisions by crossing over joint creases. If it is a space to be opened, incise along one of the intermetacarpal spaces where swelling is greatest, but preferably between middle and ring from base of finger 1½ inches into palm. The pus pockets are then irrigated with Dakins solution or saline. We have used Permyase, we feel, with some success, instilled into the pus pocket. Keep open with vaseline gauze for 24 hours. Avoid rubber and gauze drain where possible as they cause pressure necrosis or dam up the opening. Keep the wound well open and if drains are used, apply lightly.

A general anesthetic is preferable. Local is not only painful but needle will carry in more infection to unaffected areas.

Hot wet dressings of boric acid or weak Dakins are then applied. Voluminous dressings are desirable because they retain moisture better. Heat, moisture and antisepsis are best maintained when the gauze is covered over with oilsilk. Wet the dressing every two or three hours and do not allow to get dry. Dakin solution is irritating to some skins and must be watched; the phenol derivatives are dangerous; very dilute alcohol may be used.

We usually use a bass wood splint to keep hand fixed, at rest to relieve pain and to avoid as much as possible the prolapse of tendon and the flexion of other fingers which might later become troublesome. As soon as the extension of infection has ceased, massage and passive motion along with the use of the Infrared or heat lamp is utilized to hasten absorption of serum and round cells, to decrease the likelihood of adhesions in the joints, and preserve the vitality of muscles. Improvement

sometimes seems slow and discouraging but persistence often gets results.

Injuries to the hands and fingers are common among our working people and so often are inadequately treated. So such sacrifice of these members to infection is a reproach to our social system. Such sacrifice can be largely avoided by constant vigilance, strict adherence to cleanliness and scrupulous observance of surgical principles to the most trivial injuries. The conservations of an increased number of breadwinning organs will be our reward.

The Sulfapyridine Treatment of Lobar Pneumonia

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The gratifying results obtained from the use of sulfanilamide in the treatment of streptococcus hemolyticus infections stimulated a wide interest in the possible therapeutic action of sulfanyl dyes in other infectious diseases. In consequence the number of sulfanyl drugs in general use has increased and the scope of their application in the treatment of bacterial and virus infections has widened progressively. Among the sulfanyl drugs more recently introduced is sulfapyridine (M. & B. 693, Dagenan) which was first synthesized by Ewins and Phillips, and described by Whitby. This compound was found by Whitby to exhibit effective therapeutic activity in certain experimental bacterial infections including those produced with more than one type of pneumococcus. Soon after Whitby's communication, Gaisford and Evans reported the results from a clinical trial of this drug in the treatment of 100 cases of lobar pneumonia. From a comparison of the death rate in the treated cases which was 8 percent with that of 100 untreated control cases which was 27 percent, the authors concluded that sulfapyridine is therapeutically effective in the treatment of lobar pneumonia. Subsequently the findings of Whitby have been confirmed and extended by the studies of both Fleming and Long. Likewise, case reports too numerous to review here have brought substantiation to the observations of Gaisford and Evans upon the valuable therapeutic action of sulfapyridine in pneumococcus lobar pneumonia.

The purpose of this paper is to present certain of the practical aspects of our present knowledge regarding the use of sulfapyridine in the treatment of lobar pneumonia. The data to be presented were derived partly from a review of the literature and partly from an experience gained in the use of the drug in 50 cases of lobar pneumonia.

Sulfapyridine is a white, finely crystalline powder, practically without odor or taste. Its solubility in water is 1:1000 and in 5 percent dextrose in physiological saline, 1:500. The drug may be administered either by mouth or by hypodermoclysis, although the first method only has been adapted for general use. Because of its low solubility, absorption of sulfapyridine from the gastro-intestinal tract is somewhat irregular. Within a short time after oral administration, however, the drug can be detected in the blood, where it exists in a free and conjugated or acetylated form. By means of a colorimetric test similar to that employed for the measurement of sulfanilamide, it is possible to follow the blood content of sulfapyridine from day to day during the period of its administration. Excretion of sulfapyridine occurs largely through the kidneys at a rather slow rate—3 to 5 days being required for complete elimination in the average case. The risks of drug intoxication are therefore

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distinctly greater in subjects with edema or impaired renal function from any cause.

The pneumonia patient under treatment with sulfapyridine requires the usual measures of general care. Since curative effects cannot be anticipated from the use of sulfapyridine in all acute pulmonary infections alike, it is also an essential preliminary step to determine the etiology of the pneumonia by sputum typing at the outset. Culture of the blood is also desirable in that it may afford certain valuable prognostic information. Certain accessory clinical findings also must be checked from time to time during treatment as precautions against intoxication from the drug itself.

The toxic effects of sulfapyridine are similar in character to those of sulfanilamide. The direct or immediate untoward side effects of sulfapyridine in man are said to be: cyanosis, headache, mental apathy, nausea and vomiting. Of these nausea and vomiting are the most troublesome in the experience of most observers. The more serious indirect or delayed form of intoxication which is apparently due to drug hypersensitiveness is manifest by: ominous fever, dermatitis, hemolytic anemia or granulocytic leukopenia. The administration of sulfapyridine demands therefore the same careful supervision necessary with the use of sulfanilamide. Drugs containing the sulfate radical in their chemical structure are best withheld. The hemoglobin content and the leukocyte count of the blood should be checked daily. Significant drops in either are signals of danger and constitute sufficient indication for withdrawing the drug and forcing fluids to hasten its elimination. Reference has been made to the increased risk of drug intoxication in those with impaired kidney function. The evidence that subjects of allergic disease are predisposed to indirect intoxication from sulfanyl dyes is sufficiently suggestive to warrant the exercise of special caution in the administration of the drug in those cases. Also, Marshall has reported that the direct toxicity of sulfapyridine in animals is greater than that of sulfanilamide. For that reason, sulfapyridine is not generally employed in those infections in which a favorable therapeutic response can be expected from the use of sulfanilamide.

The dosage and mode of administration of sulfapyridine are not at present strictly standardized in the treatment of lobar pneumonia. The chief objectives of the treatment are to give at the outset a sufficient dosage to bring the concentration of the drug in the body fluids up within the therapeutic range as soon as possible and to maintain this concentration at an effective level thereafter. Observations on treated cases indicate that the optimal therapeutic concentration of sulfapyridine in the blood lies between 4 mgs. and 8 mgs. percent. A suitable regime in adults is to give three 1 gram (15 grains) doses during the first 4 hours of treatment and then continue with 1 gram doses every 4 hours until 2 to 3 days after signs of improvement have been manifest in the form of a normal temperature and a return of the sense of well being. The initial amount of the drug given may then be reduced to 1 gram every 6 hours and kept up at that rate for 3 to 4 days longer when it may be discontinued altogether. The total amount of the drug required in each case is usually between 20 and 30 grams. The dosage for children is proportionately smaller according to age and body weight.

The response to sulfapyridine therapy in pneumococcus pneumonia is apparently related chiefly to the presence or absence of bacteremia and to the extent of the pulmonary lesion. The best results in all cases are to be obtained when treatment is started early in the course of the disease while the natural defensive forces of the body are still intact. Under those conditions cases with sterile blood cultures almost uniformily show the usual evidences of improvement within 48 hours after the start of treatment. The temperature, and the pulse and respiratory rates decline to normal. The respiratory symptoms also generally abate at the same time and the patient feels relieved although the lung lesion tends to persist for the usual time. Severely ill patients with bacteremia as a group react to the treatment less dramatically and a small number of cases fail to recover though transient signs of a favorable therapeutic response may appear. When they are forthcoming, the signs of improvement in the bacteremic are similar to those in non-bacteremic cases but they evolve more slowly. In a few cases widespread pulmonary

involvement with severe toxemia may prove an insurmountable handicap to successful therapy.

The therapeutic action of sulfapyridine in lobar pneumonia is apparently dependent upon its ability to inhibit the growth of pneumococcus in concentrations which are relatively nontoxic to the body tissues. The exact mechanism of this growth-inhibition is not as yet clearly understood. Recent studies showing that this result is brought about through an antagonistic action of the drug to the peroxide-splitting enzymes of the bacterial and body cells lacks sufficient confirmation for belief. Whatever the mechanism may be, the evidence from clinical observation suggests that recovery from pneumonia under sulfapyridine treatment is not complete until the time when specific anti-pneumococcus antibodies are ordinarily formed to overcome the invading bacterium. Theoretically therefore ideal therapy in lobar pneumonia would appear to consist of combined treatment with sulfapyridine and specific anti-pneumococcus serum. However, cases treated by this method have not to date been reported in sufficient numbers to prove this point.

To summarize, the evidence is accumulated to show that sulfapyridine has a valuable therapeutic action in pneumonia due to pneumococcus. Final definitions of its usefulness and limitations in these pneumonias must await further clinical trial. However, the treatment presently appears to be most effective when given early in the course of the pneumonia before the defensive forces of the body have been depleted. The therapeutic action seems less certain in pneumonia with bacteremia, or widespread pulmonary involvement. The results in pneumonia in those with preceding disability would appear to depend to a large degree upon the nature of the underlying illness.

Toxic reactions, especially those of the delayed or indirect form, are a distinct limitation to the therapeutic usefulness of sulfapyridine in lobar pneumonia. Some 5 percent of individuals react with serious toxic symptoms to the administration of sulfanyl drugs. Close watch for danger signals of intoxication is an indispensable part of the treatment in all cases, and especially in subjects of allergic diseases. It is known to be hazardous to administer sulfapyridine to those who have previously shown signs of delayed intoxication from sulfanyl drugs.

Because it is useful in a larger group of cases, less expensive, and easier to administer, sulfapyridine promises to supplant specific serum therapy as the treatment of election in pneumococcus pneumonia. Sulfapyridine, however, cannot by any means be recommended to replace serum therapy altogether. In view of its established curative action, it seems safe to predict that on the contrary specific serum therapy will remain an irreplaceable measure in suitable cases, at the least in those in which the sulfapyridine treatment either proves ineffective or is contraindicated.

DISCUSSION

Dr. M. W. Beach, Charleston, S. C.:

For these long years, the Medical Profession, have been striving for some chemo-therapeutic agent that could be safely used in the treatment of Pneumonia which would markedly reduce the mortality of this disease. But this agent, to be worthwhile must fulfill certain basic requirements:

1st. Its therapeutic value in the treatment of pneumonia must be quite evident and must cause a marked decrease in the mortality rate.

2nd. That this therapeutic agent must have a fair margin of safety.

3rd. That it must be versatile and applicable to all types of pneumonia.

4th. That its cost must not prohibit its general use.

With the advent of sulfanilamide and with its wide range of experimental therapeutics, it was ascertained that types of pneumonia were benefitted by its use but these benefits were too limited to be of any practical value. However, these results were stimulating and soon sulfapyridine appeared on the horizon. The clincial results with this chemical in the treatment of pneumococcus pneumonia bids fair to overshadow all therapeutic measures that have been tried in the treatment of this disease. Most encouraging reports are coming from all parts of the country. In the Pediatric department we have treated six cases of pneumonia with sulfapyridine. The graphic sheets are rather interesting and these slides are self-explanatory.

Questions by a member:

I want to ask one or two questions. First, I understood Dr. Pendergrass to say yesterday that serum is contra-indicated in connection with sulfapyridine. I should like Dr. Kelley to discuss that for just a minute. I should also like him to discuss concentration and the hemoglobin and the delayed toxic condition. I understood from the X-ray findings

that physical condition continues. Therefore, what likelihood is there of empyema in these cases compared to our former method of treatment?

Dr. Kelley, closing the discussion:

We consider a drop of ten per cent or more in the hemoglobin as being an indication for checking the hemoglobin determination. If there is a further drop in the hemoglobin or if jaundice develops we discontinue the drug. A drop in hemoglobin beyond that which accompanies the intoxication from the pneumonia, along with a proportionate drop in the erythrocyte count, forms a very definite indication for discontinuing the drug.

As to the remarks of Dr. Pendergrass, which unfortunately I did not hear, off hand I can see no reason why there should be any contra-indications to the use of serum and sulfapyridine therapy together, but that does not mean that they may not exist. We have had too little experience with the method to hazard an opinion.

We have had no case of empyema in any of the pneumonias we have treated. We have had much less empyema this year than we had last year, and I do not believe there is any added danger in that direction from the use of sulfapyridine therapy. The anatomical changes in the lungs do not evaporate by any means; they remain the usual time; and I have heard of at least one case in which there was apparent extension of the lesion in the lung after the temperature had become normal. After twenty-four hours of normal temperature there was evidence of a spread to the other lung. That, however, is relatively unimportant if the infection is overcome.

Epilepsy and Its Management

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The past few years have witnessed enthusiastic campaigns being waged against the ravages of such diseases as syphilis, tuberculosis, and cancer. Today I want to call your attention to a disorder that constitutes one of the medical professions major problems, I refer to that group of the epilepsies that we call the true, essential or idiopathic type of epilepsy.

We recognize that epilepsy may result from any of a number of etiological factors, for instance the Jacksonion type of epilepsy which is a result of a cortical lesion. We have the epilepsy resulting from endogenous and exogenous toxins, arteriosclerosis, syphilis and many other disorders.

At this time, I wish to refer particularly to the essential type of epilepsy. However, in the course of my talk, there will of necessity be references to the entire group.

There are at the present time approximately one-half million epileptics in the United States. The majority of these patients remain non-institutional, however, about 12% to 15% require hospital care.

Lennox groups epileptics as follows: First group—60% to 80% are mentally normal or nearly normal. Second group—20% to 40% are definitely deteriorated. Third group—This includes the small percentage that are congenital idiots and imbeciles.

Peterman says that 33% of all convulsions in childhood or 60.5% of all the chronically recurring convulsions are due to essential epilepsy.

For a period of ten and one-half years beginning with 1928 and ending June 30, 1938, there were 9,921 patients admitted to the S. C. State Hospital, of this number 535 were found to be suffering from epilepsy. This is 5 1/3% of total admission. Of the 535 there were 248 white persons, divided according to sex there were 138 males and 110 females—there were 235 Negroes, 144 males and 91 females. From the above statistics we note that the races are about evenly divided, the males predominating. The majority of these admissions were before the age of 35 years.

However, let us not lose sight of the fact that the great majority of these cases were psychotic, many having undergone marked mental deterioration. Therefore we must assume that these patients have in most instances been sufferers for years before being sent to the hospital.

Epilepsy appears to be more closely related to the disorders of childhood than to those of adult life. The disorder usually beginning before the age of 20 years, but we must not

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forget that epilepsy may develop even in late life.

The fact that epilepsy may be due to any one of a number of etiological factors has been mentioned, but in the production of essential epilepsy, we find many interesting possibilities.

There are those who believe that heredity plays an important part, not that a person inherits epilepsy, any more than he inherits tuberculosis or some other disorder, but that there is an inherited tendency, and all that is needed to precipitate an attack is an exciting cause as fatigue, alcoholism or some infection. Heredity appears to have most influence with the young. The older a person is at the beginning of the disorder, the less is the importance of heredity. Others believe that epilepsy is an individual affair.

We are familiar with the fact that in infancy and childhood, disturbances of the gastro-intestinal tract are frequently accompanied by convulsions. These attacks while non-epileptic are without a doubt closely associated to the true type of epilepsy. There are those who believe that severe convulsions in early life may predispose to epilepsy in later life.

Miller suggest that epilepsy may be the result of sensitization, because attacks often disappear or become less severe during and after an acute infection. In conjunction with this I might say, that I have observed in institutional cases, the disappearance of attacks during an acute illness.

Reflex irritation as produced by intestinal parasites, focal infections and visual disturbances may initiate attacks.

Some investigators believe that epilepsy is due to an organic change or lesion in the brain. However, no one has yet demonstrated any constant lesion at autopsy.

The manifestations of epilepsy may be variable. Time does not permit us to go into detail consideration. These may be mentioned briefly as: Grand mal seizures — this is the most severe manifestation of true epilepsy, about one-third to one-half of these have a preliminary warning or aura of the impending attack—this aura may be pain in some part of the body—usually it is related to the abdomen and head. Others complain of visual and auditory disturbances. In a grand mal seizure the first or tonic phase lasts about a half minute or less. The second or clonic phase lasts from a few seconds to three or five minutes. This clonic phase is followed by a stuporous stage lasting from a few minutes to hours.

The petit mal seizure is less severe than the grand mal attack. It may be characterized by a momentary loss of consciousness, and in some instances there is no other manifestation than vertigo. In some cases, the petit mal seizure develops into grand mal ones.

In the Jacksonion type, this is the result of an abnormality of the cerebral cortex. An aura may occur in this type—it is usually a motor manifestation.

Status epilepticus may frequently be seen in sufferers from the grand mal type of convulsion. This refers to a group or series of convulsions. This is a serious occurrence and requires immediate attention.

Pycno-epilepsy, or myriad spells—these are attacks in which there appears to be complete inhibition of mental activity without appreciable loss of consciousness. These attacks occur more often in children—they may disappear without treatment and never recur.

Another manifestation is one that is characterized by a change in disposition or attacks of violent anger and disturbances usually the patient does not remember an attack. These are spoken of as epileptic equivalents.

In some atypical attacks the patient runs amuck.

Nocturnal epilepsy is occasionally seen—the attacks occur at night, however in nearly every case of this type, day attacks will follow.

The diagnosis of epilepsy may present a serious problem, but with our modern methods of examination, this problem has been lessened. In some cases attacks may be induced through hydration. This can be accomplished through ingestion of large amounts of fluids and the use of drugs to hold the extra fluid in the tissues.

The management of epilepsy resolves itself into prevention of the disorder and treatment, of the attacks once they have occurred. In those cases where the seizures are traced to a definite cause as in alcoholism, and other exogenous toxins, arteriosclerosis, syphilis and focal lesions in the cortex. The treatment is

directed toward the underlying cause—but at this time we are primarily interested in the essential type.

It has been aptly said that a doctor to be successful in dealing with epileptics must be a keen judge of human nature and human relationships.

Epilepsy must be recognized quickly and immediate treatment instituted. Once the attacks have begun, if allowed to continue, the habit may be formed. We must recognize the danger of allowing the epileptic habit to take hold.

Proper physical and mental hygiene is essential—all physical and functional abnormalities should be corrected. Exogenous toxins as alcohol should be avoided. Relief of mental and physical fatigue is indicated. Mechanics of the body may play an important part, especially posture in children. In some cases of epilepsy of unknown origin, corrected posture of the body has brought about cessation of the attacks. Some of the suggested reasons for this are as follows: 1. There is relief of fatigue. 2. Relief of constipation. 3. Improvement of intra-abdominal circulation. 4. Increased ventilation of the lungs.

Surgery may be indicated in cases for removal of hemorrhagic areas, cystic growths and tumors. A number of cases of unexplained epilepsy have after thorough study found to have suffered previous head injuries with resulting injury to the brain substance and following removal of these cicatrices complete relief was obtained.

As regards mental hygiene. The close cooperation of the patients family and companions is needed. Self-pity is to be avoided—freedom from worries and cares. A hobby often helps wonderfully.

The epileptic child providing attacks are not too frequent is better off at school. In cases where mental deficiency is present institutional care is indicated, because of the fact that trained teachers are available. Needless to say the vocation of an epileptic must be chosen with care.

As regards the use of drugs—sedatives are employed to reduce the number and severity of the attacks. Grand mal seizures seem to be more influenced than the petit mal ones. For years the bromides were extensively used, but due to the fact that many were unable to tolerate the drug properly the use of this sedative is gradually giving way to less toxic ones. In those cases where the bromides are still employed it has been found that if the salt intake is lowered the bromides are more effective.

Pheno-barbital has been substituted for the bromides in the majority of cases. Phenobarbital may be employed in most cases over a long period of time without any ill-effect. There are some who claim that pheno-barbital exerts too great a sedative effect — that it renders the patient drowsy and mentally dull. It has been my experience that in cases of this nature the amount of the drug given is too great. I have observed the use of phenobarbital in a large series of cases over a period of years, and I have been impressed by the apparent absence of any toxic reaction. The dosage in this group of cases has ranged from 1½ grs. per 24 hours to a maximum of 12 grs. per 24 hours.

In some cases the bromides and phenobarbital have been found practically useless—it is in some of these cases that sodium diphenyl hydantionate has proven efficacious.

Merritt and Putman selected a group of severe epileptics, 200 in number, who had not been controlled by bromides, pheno-barbital, ketogenic diet, dehydration and other measures —they report sodium diphenyl hydantionate very effective in controlling grand mal seizures. Of 118 patients having this type of seizure 58% were completely relieved. In 27% the attacks were markedly reduced in number, and in the remaining 15% little or no improvement was noted. Results obtained in those suffering from petit mal seizure were encouraging. In 74 patients suffering with frequent petit mal seizure—35% obtained complete relief—48% experienced a marked reduction in the number of attacks. Of six patients who suffered from psychomotor equivalents type of epilepsy—four were completely relieved, and the other two experienced marked relief.

In giving sodium diphenyl hydantionate to those who have been on pheno-barbital or bromide—do not abruptly discontinue use of the old drug on beginning use of the new drug. Gradually cut down on use of pheno-barbital

or bromide until the new drug has completely replaced use of old one. In some cases abrupt withdrawal of pheno-barbital or bromide sets up a status epilepticus.

In giving sodium diphenyl hydantionate to adults begin with .1 gm dose three times a day—if necessary gradually increase to .2 gm three times a day. In children give .1 gm twice a day—adjust subsequent doses as indicated. In very young children smaller doses are usually required. The drug is best given before meals. If there is gastric disturbances give it with or immediately following the meal.

This drug must be given under supervision.

Toxic reactions are of two types. Merritt and Putman reported approximately 15% of their cases suffered from one or more of the following — dizziness, slight nausea, tremors and ataxia. There was an occasional case of blurred vision and transient diplopia. The reaction can often be relieved by reducing the amount of the drug, and in the majority of cases this can be gradually raised to form level of intake.

In 5% of cases treated, a more severe reaction occured. In practically all of these cases this was a dermatitis or purpura, reduction in amount or discontinuance of the drug resulted in recovery from the abnormal reaction.

There are many other sedatives employed, but the ones already mentioned are typical.

In recent years the ketogenic diet in treating essential epilepsy of children has found great favor. Helmholz and Goldstein reported that after 15 years experience with the ketogenic diet in children under 15 years of age that 31% of patients with essential epilepsy were rendered free of attacks. 16% were definitely improved.

In 1928 Barborka reported that 14% of adults treated with ketogenic diet were kept free of attacks. In the use of the ketogenic diet absolute cooperation must be obtained. In this diet large amounts of fats are employed. The carbohydrates and proteins being cut to a minimum. The carbohydrates and proteins are kept low so that there is no available glucose for complete oxidation of the fats, and as a result we have the development of an acetone body acidosis. The caloric content of the diet depends on age, weight and activity. In general the food requirements of a child is met by giving 50% more than the basal caloric needs. Care must be taken that there is adequate intake of the vitamins and minerals, if necessary these may be administered in medicinal form.

As regards the protein intake—it is not advisable to go below 1 gram per Kg in children or 2/3 gram per Kg in adults.

The dietary change may be initiated gradually. In some instances a short period of starvation, only water is given.

The initial diet may consist of 1 gm of fat to 1 gm each of carbohydrates and protein. This is spoken of as the 1.1 diet. The change in diet is made every week until the proper effect is obtained. In some cases the proportion may become 4 gm of fat to each gram of carbohydrates and proteins. The urine should be tested regularly for appearance of acetone and diacetic acid. This should appear in the 2.1 diet. In cases that respond attacks decrease in number or entirely disappear in 1 to 2 months. After the patient has been free of attacks for a least six months there may be a gradual return to a normal or regular diet. During the diet the sedatives should be gradually withdrawn until the patient is receiving none.

The efficaciousness of the ketogenic diet is ascribed by some to the dehydration effect of it.

Wilder and others say that the acetoacetic acid produced in the body by the incomplete oxidation of the fats has an anesthetic effect. It is important in the use of the ketogenic diet to have complete cooperation. One will find that this may be difficult particularly in the epileptic child who is being cared for at home.

Dehydration is one of the oldest methods of handling epileptic seizures. This form of therapy is used on the theory that the presence of excessive fluid in the central nervous system is in some way responsible for the convulsions therefore drying out the body will reduce the amount of this fluid until mechanical pressure of the brain is relieved. In conjunction with this some recommend the restriction of salt intake in the ketogenic diet as it is a known

fact that salt favors the retention of fluids in the tissues. The frequent use of saline laxatives in epilepsy is based on the fact that it with draws fluid from the tissues and at the same time helps to relieve constipation.

Status epilepticus requires immediate treatment. This manifestation is met with frequently in institutional cases, particularly in those who have undergone mental deterioration. Convulsions may occur in series when there is an abrupt withdrawal of the sedative. In some cases no definite reason can be ascribed. In these cases the convulsions may cease after two or three have occurred. In some cases the convulsions may come at frequent intervals for days.

Usually the condition of these cases prevent the administration of drugs by mouth. Sedatives are employed rectally or by the intravenous routes. Such drugs as luminal-sodium, and sodium amytal intravenously have given good results. These are usually repeated as indicated. Dehydration methods as enemas, glucose and magnesium sulphate intravenously are used. Lumbar punctures are employed to relieve any increased spinal fluid pressure. The lumbar puncture is best repeated usually every 6 to 8 hours, as long as the condition warrants. 1% methylene blue solution intravenously has been employed by some. This is given in doses of 10 to 20 CC repeated at intervals of 4 to 6 hours. The writer has used this in some cases with apparently good results.

There are some rules regarding general care of the epileptic that should be stressed. The epileptic should avoid situations that might produce injuries or death in case of a sudden seizure. The writer has known a few cases in which death occurred from suffocation during an attack. These deaths occurred during the night while the patients were asleep. An attack occurred, the face became submerged in a soft pillow, and suffocation followed. Insist that the patient sleep on a hard mattress without a pillow or else use a pillow that is made with a substance such as hard hair.

I have left the consideration of preventative measures until the last. I believe that as in other disorders our best treatment of epilepsy is to try to avoid its occurrence.

The question of marriage between epileptics is often raised. The marriage of two epileptics is to be avoided. In those cases where the family histories are good, and the epilepsy appears to be an individual affair, there can be no serious objection, providing the parties are otherwise healthy.

Alcoholism is to be avoided—there are investigators who believe that alcoholism in one or both of the parents may predispose to epilepsy in the offspring.

In families where epilepsy occurs physical, mental and emotional strain must be avoided. Special training and education measures should be adopted in those cases that exhibit a predisposition to epilepsy.

Lastly, there must be an awakening on the part of our profession. Many an epileptic has been doomed, because his or her physician adopted an attitude of hopelessness. Let us give the patient the benefit of our knowledge and experience, and in many cases the underlying cause of the disorder will be recognized and with appropriate treatment we will have rescued a person from a living death to a life that may mean happiness and usefulness.

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DISCUSSION

Dr. E. W. Long, S. C. State Hospital, Columbia, S. C.

It is a privilege and an honor to be called upon to discuss Dr. McLendon's paper. I want to congratulate him upon this presentation. It seems to me that the greatest need for any paper is to stimu-

late one to think and to do something. Every time we see an unfortunate patient have a convulsion it is a challenge to us to do something.

Epilepsy as considered in this paper is the idiopathic type. The etiology of this condition is not known, therefore, we are laboring under difficulties in our treatment and as the result the condition is treated symptomatically. However, we are able to give some relief to the sufferers of this disease.

Generally speaking the treatment is with drugs, dietary measures, proper elimination and an emotional eveness. With drugs the attacks may be less in severity and less frequently. To accomplish the best results, however, the drugs must be given regularly and in variable doses for the individual case. It must be given in large enough doses to control the symptoms and continue it even though the attacks are very infrequent. These drugs I shall not mention here because I am sure you are familiar with them.

Diet should be well regulated and controlled. The high fat low carbohydrate diet is general information now. This dietary measure is more beneficial in the younger people than it is in the older ones. Patients must not be allowed to overeat, for it is known that epilepsy increases the appetite in many cases. The diet should be kept balanced so as to keep the patients in the best state of nutrition. Of course when the carbohydrate fat protein balance is interfered with it is necessary to supp'y vitamins and minerals in order to secure the effects of a balanced diet. It is common knowledge to us all that if a patient is in a poor state of nutrition his nervous system becomes affected and his emotional reaction is unstable.

Elimination in this disease is very important as is true in any other disease. It should be kept at its best. Physiologically we know that increased waste products will depress the organism and reduce the resistance at the synapses, thus allowing the spreading of stimuli more easily.

The emotions: The unstable emotional condition must cause some speculation as to its effect upon epilepsy. I believe though that most of us will agree that when a patient becomes upset emotionally that the seizures are more frequent and more severe. I am sure that this is true in some cases at least. As long as a patient is kept upon a routine and free from any influences that will depress, irritate him or even cause him to be over-elated his seizures are less frequent.

Alcohol is generally regarded as an important factor in the etiology of epilepsy as well as other mental diseases. Although we feel that epilepsy is not inherited the predisposition to this disease might be transmitted to the offspring. Embryologically it is known that the types of tissues are differentiated in early fetal life. Thus in the female we are told that all the ova are present as soon as the tissues in the organism are differentiated. If this be true anything which affects the emotional life or the physical development of a female individual will directly or indirectly influence the mental health of her offspring.

It is my feeling, therefore, that such agents as alcohol and nicotine must have an important bearing upon the mental health of a child who might be born of a mother who is given to the use of one or both of these drugs.

Cancer of the Lung--Successful Pneumonectomies

FRANK P. COLEMAN, M. D., COLUMBIA, S. C.

Interest and enthusiasm in the management of cancer has been stimulated recently by the appropriation of money by the Federal Government, the organization of State Cancer Commissions, and the State Board of Health's encouragement in the development of tumor clinics in various localities.

It seems appropriate at this time to discuss with you cancer of the lung which ranks second only to the stomach as the primary site of carcinoma. Cancer of the lung has risen from comparative obscurity to a position of importance. The incidence of cancer of the lung in Koletsky's[1] series of 1,064 malignant tumors studied postmortem was 9.4 per cent. In 3000 consecutive autopsies reported by Brines and Kenning[2] the lung ranked second only to the stomach as a primary location of cancer. In other words one person out of every ten dying with a malignant tumor dies with cancer of the lung.

The etiology of cancer in this location is just as confusing as etiological factors operat-

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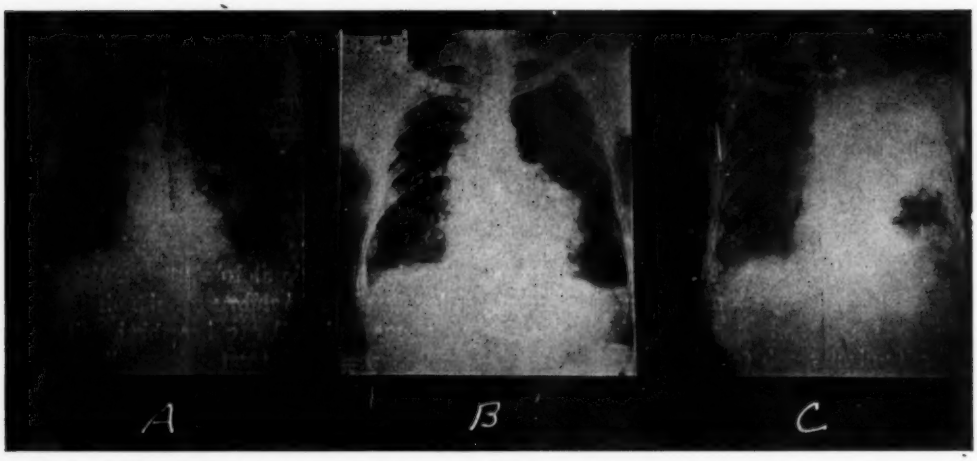

FIGURE I. (A) Preoperative film revealing an irregular area of increased density along the left cardiac border. No positive evidence of malignancy, but there are sufficient changes to have warranted further investigation. (B) Twenty days after institution of a diagnostic pneumothorax left.. A free pleural space is present with a good collapse of the upper lobe, and the tumor mass of the lower lobe stands out in strong contrast. (C) Two months after pneumonectomy (left). The left diaphragmatic dome is at a level of the third rib anterior. The mediastinum has shifted to the left. The left hemothorax is decreased in size. The residual pleural cavity has been obliterated by organization of fibrin and scar tissue formation.

ing as a causative agent of cancer elsewhere. The increased incidence of cancer of the lung is both relative and real. The wider use of coal tar products exhaust gases from automobiles, tobacco smoking, and other agents resulting in chronic pulmonary irritation are considered to account for the real increase in cancer of the lung.

Since the successful treatment of cancer in this location depends upon an early diagnosis, it seems particularly advisable to discuss the symptomatic manifestations of this disease in some detail. Cancer of the bronchus does not produce symptoms unless ulceration of the lesion results or unless the bronchus is occluded or some regional structure is involved. In the past, most of the signs and symptoms ascribed to cancer of the lung have in reality been due to carcinoma of the structures involved by regional and remote extension of the growth from the site of its primary origin. The lesion may long be silent and the first warning of its presence may be a primary brain tumor which later proves to be a metastatic lesion from cancer of the lung. A serosanguineous pleural effusion, a Horner's syndrome, recurrent laryngeal nerve paralysis, destruction of the bony cage, or evidence of superior vena cava obstruction—any of these may characterize this or that particular patient upon his first visit for relief. The manifestations of such regional involvement in itself means that the condition has advanced beyond a hope of cure. On the other hand, a large percentage of these patients do have symptoms suggesting the possibility of the presence of a cancer of the lung during a curable period. These neoplasms arise within the bronchus or bronchiole and ulceration of the lesion or obstruction to the flow or air into or out of the lung becomes the principal mechanism in the production of symptoms. The growth in the bronchus simulates a foreign body and cough with or without sputum is a common manifestation. Ulceration produces hemorrhage which may be the first symptom. If the obstruction is complete, atelectasis, bronchiectasis, or abscess formation results. The lesion may then simulate either an acute or a chronic pulmonary infection.

The frequency of symptoms in eighteen cases which the author has seen in the past year was as follows:

Symptom	No. Cases with Symptom	Per Cent
Cough	15	83.3
Sputum	13	72.2
History Influenza or Pneumonia	13	72.2
Pain	12	66.6
Dyspenea	12	66.6
Hemoptysis	11	61.1
Emaciation	9	50
Pyrexia	8	44.3
Associated Lung Abscess	6	33.3

Cancer of the lung does not have a characteristic symptom-complex; however, a combination of two or more of the symptoms given above should arouse suspicion of its presence. It is often impossible to make a clinical diagnosis of cancer of the lung in its early stage from the symptom complex alone, but persistent pain in the chest, atypical pulmonary complaints, hemoptysis in an otherwise healthy individual, presence of a lung abscess in a patient of the cancer age, shortness of breath, and unexplained loss of weight are frequently the first manifestations of this disease. If cancer of the lung is to be diagnosed early, it must be kept in mind.

If a patient presents a symptom or symptoms suggesting the presence of a lung tumor, a diagnosis can readily be established in the majority of cases. It is possible to visualize through the bronchoscope 75 per cent of these lesions and prove the presence of a malignant tumor by biopsy. If the lesion cannot be visualized, sufficient indirect evidence such as broadening of the carina and fixation of a portion of the bronchial tree will be present at times to warrant the conclusion that a thoracotomy is in order and that a cancer is likely present. X-ray examination does not conclusively prove the presence or absence of a lung tumor, but this method alone is capable of establishing a correct diagnosis in about two-thirds of the cases as we see them at the present time. Where an intrabronchial lesion cannot be visualized through the bronchoscope, bronchial obstruction to the passage of lipiodal is characteristic of bronchogenic carcinoma. Having exhausted the most direct methods of proving the presence of the lesion, diagnostic pneumothorax should be executed. If a tumor mass in the periphery of the lung is present, a collapse of the healthy portion of the lung will take place and the tumor can easily be visualized on the X-ray film or directly by inserting the thoracoscope into the partial pneumothorax through an intercostal space. Examination of the sputum for tumor cells offers great promise in the early diagnosis of cancer of the lung; however, this is a meticulous procedure requiring great skill and familiarity with its use. Such diagnostic procedures as examination of a bloody pleural exudate for tumor cells, biopsy of extrathoracic lymph node metastatic lesions, and biopsy of other metastatic lesions have a place in confirming the presence of only an inoperable cancer of the lung.

The successful treatment of cancer of the lung demands that the same consideration be given this lesion as cancer involving any other organ. The lung and its regional lymph-

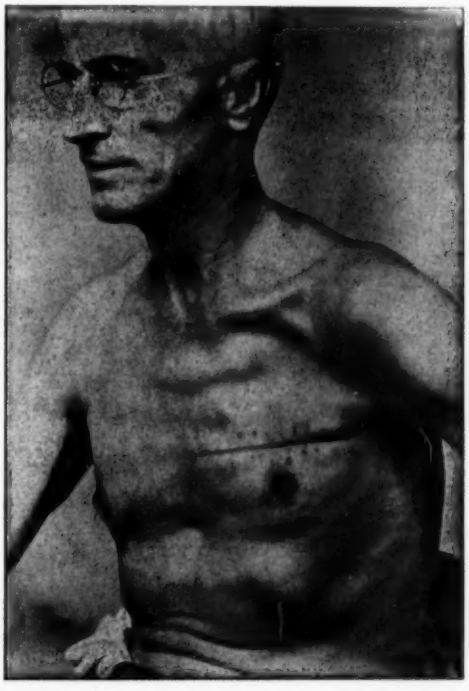

FIGURE II. Apperance of patient three months postoperative. The scar over the third left intercostal space illustrates the anterior approach of a pneumonectomy. Natures effort to obliterate the left pleural cavity is evident by the depression seen in the subclavicular region and an increase in the depth of the supraclavicular fossa.

nodes must be surgically removed. Graham[3] in 1933 performed the first successful pneumonectomy for cancer of the lung, and an increasing number of successful cases are appearing in the literature as well as two, three, four, and five year operative cures. Lobectomy for carcinoma of the lung has rightfully fallen into disfavor, for it is technically impossible to remove the involved regional lymph nodes, and partial removal of this organ is no more applicable to the treatment of cancer in this location than it is to any other organ. A one-stage operation, removing the entire lung and regional lymph nodes after the method of Reinhoff[4], is the most popular technique of today in the good-risk patient. In the poor-risk patients a two-staged procedure in which the pulmonary artery is ligated during the first-stage with removal of the lung during the second-stage is practiced.

The removal of one lung is not a formidable procedure, for it offers a slight ray of hope to a patient with a lung tumor who otherwise has a hopeless disease. It is surprising how well they tolerate the absence of one lung, and frequently they are rendered less dyspneic by the removal of the cancerous lung. Radiologists in general are not enthusiastic in their treatment of cancer of the lung, for they have met with uniformly poor results as to cure and even as to palliative relief. If a lung abscess develops secondary to a bronchogenic carcinoma, and if external surgical drainage of the abscess is established in a patient, who for some other reason besides the abscess pneumonectomy is contraindicated in, X-ray therapy has proven to be a worthwhile palliative procedure in three cases which I have observed.

SUMMARY

The successful management of cancer of the lung depends upon an early diagnosis. Its frequent insidious onset, late development of symptoms, and its tendency to masquerade as acute and chronic pulmonary infections make its recognition difficult unless physicians are conscious of its true prevalence and view obscure pulmonary complaints with suspicion. The absence of one lung is not incompatible with a vigorous and active life which has been confirmed by many successful operations on man. The prognosis of bronchogenic carcinoma for which pneumonectomy is indicated is uniformly fatal without operation. In the past year the author has observed eighteen cases of bronchogenic carcinoma and two of the group were operable resulting in successful pneumonectomies.

CASE REPORTS

CASE I. C. E. D., a white male, aged 57 years, and a farmer by occupation, entered the Columbia Hospital July 3, 1939 complaining of pain in the left chest, cough, weakness, and "blood spitting." He was perfectly well until January 1938 at which time he became weak, and suffered with intermittent headaches. In November, 1938 he developed a severe cough which continued up until his admission to the hospital. In December, 1938 he began to lose weight, and felt as if he was growing progressively weaker. In April, 1939 he began to cough up blood and from this date to his admission he had twelve distinct hemorrhages, the largest totaling four ounces of blood. The total amount of weight lost was twenty-seven pounds.

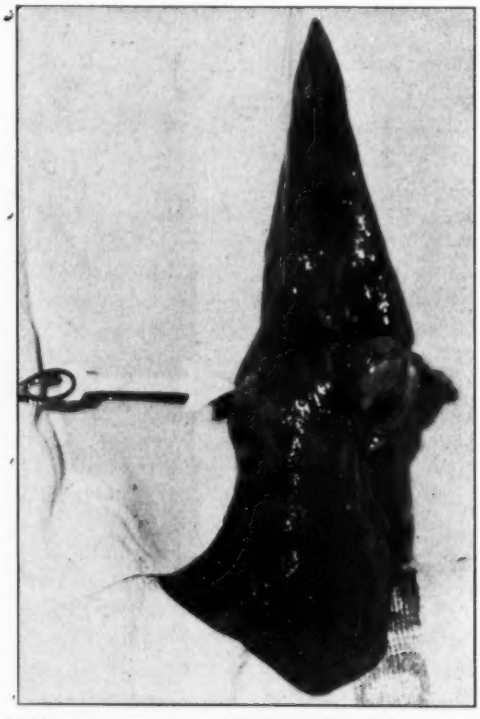

FIGURE III. Gross specimen (left lung.) Arrow points to primary lesion, peripheral carcinoma. Note large lymph node of hilus entirely replaced by carcinoma.

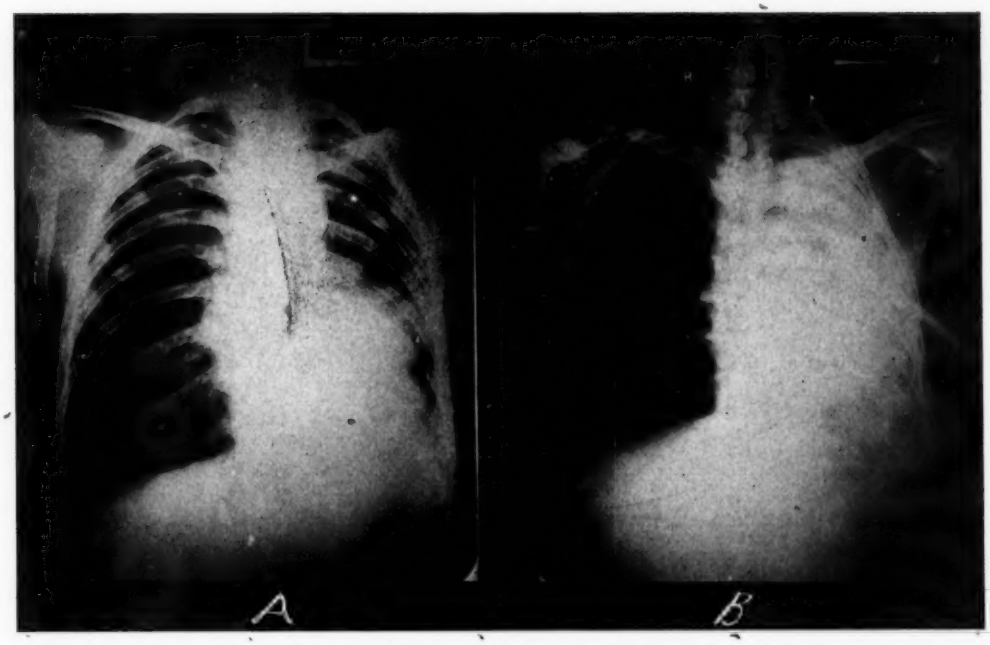

FIGURE IV (A) Preoperative film revealing the following X-ray signs of atelectasis of the left lung: shift of the mediastinum to the left, rise of left diaphragm and narrow intercostal spaces on the left. There is an abscess cavity with a fluid level in the hilus region, and the lower lobe is dense. (B) One month after a left pneumonectomy. The residual empyema cavity (capacity 30 cc.) has been filled with lipiodol and it is drained dependently by the intercostal tube. The dome of the left diaphragm is above the level of the left third rib anterior. The left pleural cavity is almost obliterated.

The physical examination revealed an elderly male older in appearance than the stated age of 57 years. Expansion on the left was restricted slightly. The breath sounds in the left base were altered little and an occasional rale could be heard. There was a moderate generalized arteriolosclerosis, and the prostate gland revealed a 3 plus enlargement.

The hemoglobin was 80 per cent, and the routine blood counts were within normal limits. The urinalysis and blood wassermann were negative.

An X-ray examination of the chest prior to admission revealed an irregular area of increased density, ill-defined, along the left border of the heart.

On the day of admission, a bronchoscopic examination revealed no intraluminary mass; however, sufficient indirect evidence was present to warrant a tentative diagnosis of cancer of the left lung, peripheral in origin. The lateral wall of the left lower lobe bronchus was partially fixed and the respiratory excursions of this part of the bronchial tree were limited.

On July 4, 1939 he was discharged to his referring physician, Dr. E. C. Hood of Florence, for institution of a diagnostic and preliminary pneumothorax. This was accomplished without any untoward effects, and an X-ray examination revealed a free pleural space throughout with a good collapse of the upper lobe. There was a triangular mass in the lower lobe which did not collapse with the pneumothorax. The pneumothorax did not effect his tendency to suffer from hemorrhage.

His second admission to the Columbia Hospital was on July 29, 1939. The physical examination and routine laboratory work were essentially the same as on his previous admission. The electrocardiogram was within normal limits.

On July 31, 1939 under cyclopropane anesthesia a left pneumonectomy was done through the anterior third intercostal space approach with individual double ligation and division of the hilus structures. All lymph nodes at the bifurcation of the trachea and the paratracheal nodes coursing upward along the trachea were removed. The mediastinal pleura was employed to close over the hilus structures. A permanent paralysis of the diaphragm was produced by resecting two cm. of the phrenic nerve as it coursed along the pericardium. The pleural cavity was washed with physiological saline solution and closed without drainage. He stood the operative procedure well, and during the operation he received a 500 cc. citrated blood transfusion.

His postoperative course was entirely uneventful. It was necessary on the first, second, third, and tenth postoperative days to aspirate the left pleural cavity which yielded on all occasions sterile fluid.

On the fifteenth postoperative day he was permitted to be out of bed in a wheel chair and on the thirty-first postoperative day he was discharged home. No bronchopleural fistula developed.

Grossly, the left lung was fairly normal in appearance with the exception of a firm 6 x 5 cm. mass which occupied the apex of the lower lobe. One hilus lymph node 2 x 3 cm. was entirely replaced by a glistening white carcinomatous mass. The pathologist reported, "a small cell carcinoma of the lung. There was no evidence of acini formation. One lymph node was almost entirely replaced by carcinoma, while none of the remaining glands revealed any evidence of metastasis."

During the past three months this patient has been at home, and he has gained steadily in weight. He has been entirely relieved of his coughing and pain. His dyspnea on exertion is less than it was prior to operation, and he is able to walk about and attend minor duties of his farm. X-ray of the chest reveals a high rise of the diaphragm, a shift of the mediastinum to the left, narrowing of the intercostal spaces on the left, and a filling of the residual pleural cavity with an organized network of fibrin and scar tissue.

See Figure I A. B. C., Figure II and Figure III

CASE II J. B., aged 46 years, a white male, and a railroad laborer by occupation, entered the Columbia Hospital September 14, 1939 complaining of a cough and "smothering spells." In February, 1937 he had a chill, became weak and nervous, and failed to improve sufficiently under bed rest to ever return to work. A cough developed which had persisted to the date of his admission. In March, 1939 he developed a severe "cold" and pain in the left chest accompained by a chill. He remained in bed for six weeks, but stated that he had never recovered from what was diagnosed as pneumonia. On getting out of bed, he was extremely short of breath and felt as if he would smother at times. He lost from a maximum weight of 155 pounds in March, 1938 to an admission weight of 98 pounds. Four months prior to admission he was forced to remain in bed at all times because of dyspnea and weakness, and he ran a fever daily with occasional chills. Since March, 1939, his cough had been productive of a "white foamy" sputum until two weeks prior to admission when he suffered from a violent seizure of coughing and raised a large quantity of foul smelling sputum which appeared to be pus.

The physical examination revealed a frail, poorly nourished, and toxic male patient. He was dyspneic at bedrest and coughed incessantly raising a foul yellow sputum. There was no glandular adenopathy. The trachea deviated to the left of the midline. The thorax was asymetrical with almost complete absence of respiratory excursions on the left. The left intercostal spaces were narrow while the intercostal spaces on the right were bulging. The percussion note over the left chest was dull except in the infraclavicular region. The breath sounds and tactile fremitus were decreased throughout the left chest. The right lung was negative except for a compensatory emphysema. The heart was negative and the peripheral blood vessels were smooth and soft. B. P. 100/60. The clinical impression was carcinoma of the left lung with secondary abscess formation and massive atelectasis of the left lung.

X-ray examination revealed a displacement of the heart to the left, a large cavity with a definite fluid level in the hilus region of the left lung, an area of consolidation in the left lower lobe, and a normal right lung.

The W. B. C. was 10,600. R. B. C. 2,960,000 and the HB. was 55 per cent. Urinalysis and blood wassermann were negative. Sputum examinations were negative for acid fast bacilli but revealed streptococci.

On September 21, 1939 a diagnostic bronchoscopy revealed an ulcerated and fungating mass which had entirely encircled the lumen of the left stem bronchus 2 cm. below the carina. The lumen of the left stem bronchus was almost obliterated. A biopsy of the lesion revealed a papillary squamous cell carcinoma of the bronchus, grade 2.

His preoperative course was characterized by that of an acutely ill patient. He ran a fever from 98.6 to 103° F. daily. He coughed incessantly raising from 4 oz to 6 oz of foul sputum daily. He was dyspneic at bed rest and his respiratory rate ranged from 20 to 32 per minute. An intrapleural pneumothorax failed on three occasions on the left. Three blood transfusions of 500 cc. of citrated blood were given on separate days preoperatively. He also received 40 grains of sulfapyradine daily for five preoperative days. This did not alter his toxic course during these five days.

On September 27, 1939 under intratracheal cyclopropane anesthesia a left pneumonectomy with individual isolation and double ligation of the hilus structures was done through the third intercostal space anterior on the left. The left stem bronchus was ligated flush with the carina and closed. There was a moderately dense symphysis between the parietal and visceral pleurae everywhere, and the hilus structures were somewhat matted together. During the process of isolating the hilus structures an 8 x 7 cm. abscess cavity was inadvertently ruptured grossly contaminating the pleural cavity. The mediastinal surface was not repleuralized. The pleural cavity was washed with saline solution, and a no. 32 rectal tube was introduced high in the axillary line. The diaphragm was paralyzed by resecting 2 cm. of the phrenic nerve as it coursed along the pericardium. The thoracic cage was then closed and the intercostal tube drainage was connected with an under-water drainage and 12 cm. of water negative suction pressure. The patient's condition during the operation was entirely satisfactory, and 800 cc. of citrated blood was given during the operation.

His post-operative course was smooth and uninterrupted. The negative pressure suction was maintained for three days. Sulfapyridine gr. 40 was administered daily for a week. There was no evidence of an empyema until the eleventh postoperative day and repeated cultures from the pleural cavity prior to the ninth postoperative day were negative. There was no marked reaction with the development of the empyema and his temperature never ranged above 100.6° F. By the thirteenth postoperative day he was afebrile and continued so throughout his postoperative course. Two blood transfusions of 500 cc. each were given on the fifth and seventh postoperative days. The wound healed by primary intention. On the twelth postoperative day he was allowed out of bed in a wheel chair and he made rapid improvement during the ensuing weeks. His empyema did not in any manner handicap him, and he gained 10 pounds in weight the first 21 postoperative days. On the twenty-third postoperative day the empyema cavity was found to hold 30 cc. of lipiodol and to be drained dependently. Open drainage through the intercostal tube was then established. No bronchopleural fistula developed. On the thirty-second postoperative day he was discharged home.

The pathologist reported, "papillary squamous cell carcinoma of the stem bronchus grade 2, associated chronic lung abscess of upper and lower lobe, increased density of the entire lung, marked fibrosis and infiltration of the entire lung, generalized acute and chronic bronchitis. Sharp limitation of tumor to the site of its origin. No lymph node involvement."

At present, two months postoperatively, he is up and about. He can walk a long distance without dyspnea. His cough has disappeared and he is gaining on an average of three pounds per week. X-ray reveals a small residual empyema pocket which is drained dependently. The left pleural cavity has been obliterated largely by a shift of the mediastinum to the left, a good rise of the diaphragm, and a narrowing of the left hemithorax.

See Figure IV A. and B.

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SOCIETY REPORTS

OCONEE COUNTY MEDICAL SOCIETY

The Oconee County Medical Society met at the Oconee County Hospital, Seneca, Friday night, January 4, 1940, with Dr. T. G. Hall, the President presiding.

Dr. W. E. Baldwin, Director of the County Health Department, presented the plan of the State Board of Health to establish contraceptive clinics in each county through the County Health Units. He also presented the new plan of the State Health Department to furnish free antisyphilitic remedies to each member of the Society and all other qualified physicians regardless of whether the patient was indigent or not. This action would appear to be in line with the campaign to control syphilis by further encouragement of the private practitioner to treat more of these cases.

Dr. Rowland F. Zeigler, Jr. led a round table discussion on the use of sulfapyridine treatment of pneumonia. The doctor reported three cases, one a woman about eighty-five, in which the drug acted very promptly, another a little boy with a similar result and the third case of a man about sixty-eight with a marked hypertension in which the drug seemed to be of no value, the case terminating fatally. All of the members of the Society discussed their experiences with both sulfapyridine and sulfanilamide not only in pneumonia but in several other diseases.

After the scientific session was concluded a business session was held and officers elected for 1940 as follows: Dr. J. P. Booker, President, Walhalla, S. C.; Dr. James E. Orr, Vice President, Seneca; Dr. E. A. Hines, reelected Secretary-Treasurer, Seneca, S. C. The Board of Censors was reconstituted as follows: Dr. J. T. Davis, Chairman, Walhalla, S. C.; Dr. W. C. Mays, Fair Play and Dr. W. A. Strickland, Westminster.

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FEBRUARY, 1940

THE NORTH CAROLINA MEDICAL JOURNAL

Volume 1 and number 1 of the new official organ of the Medical Society of the State of North Carolina is off the press and it is indeed a creditable first number and as was to be expected is in keeping with the high standards of the practice of medicine in North Carolina. The format is attractive, simple and dignified. The tendency of the covers at least of the magazine world has been in the direction of the bizarre and to some extent this trend has been followed by a few medical journals. Most state medical journals have changed their format in recent years and it would appear to be desirable for each state journal to have an individuality along this line.

The North Carolina Medical Journal is printed on white paper including the cover. The type is easily read. The general plan of the Journal follows that of the majority of State Journals, that is the first part is given over to original articles and about the center appears the editorials. There are a number of interesting case reports, county society reports, and also a Bulletin Board giving the news of medical schools and incidentally a write up of the sesquicentennial of the celebration of the Medical Society of South Carolina held in Charleston on December 5. There is a section devoted to the Woman's Auxiliary. The first issue carries about seventy-five pages including the advertising.

Dr. Morris Fishbein, Editor of the Journal of the American Medical Association, in commenting on this new publication said "North Carolina is welcome to the family of state medical journals, coming at a time when that family has emerged from its original state of poverty and comparative illiteracy into an aristocratic assemblage of erudite and financially competent journals!"

The affairs of the Journal will be directed by an editorial board, all of the members well known in South Carolina as follows: Dr. Paul P. McCain, Sanatorium, Chairman; Dr. W. Reece Berryhill, Chapel Hill; Dr. Coy C. Carpenter, Wake Forest; Dr. Frederic M. Hanes, Durham; Dr. Paul H. Ringer, Asheville; Dr. Hubert A. Royster, Raleigh. The Editor in Chief is Dr. Wingate M. Johnson of Winston-Salem, a gifted writer and eminent clinician and in the past a distinguished member of the House of Delegates of the American Medical Association. Dr. T. W. M. Long, Secretary of the Medical Society of North Carolina of Roanoke Rapids, is the Business Manager.

The Journal of the South Carolina Medical Association extends most cordial greetings to this new comer in the field of medical journalism from the sister state of North Carolina.

PLANS FOR THE NINETY SECOND ANNUAL MEETING, SOUTH CAROLINA MEDICAL ASSOCIATION, CHARLESTON, S. C., APRIL 30, MAY 1, 2.

The guests on invitation of the President at this annual meeting will be Dr. L. A. Buie, Professor of Proctology, Graduate School of the Mayo Foundation, Rochester, Minnesota and Dr. Oscar W. Bethea, Professor of Clinical Medicine, Tulane University, New Orleans, Louisiana.

The Chairman of the Program Committee, Dr. Robert Wilson, Jr., of Charleston, announces that the new medical school now nearing completion will be dedicated and Governor Maybank will deliver an address. About sixty per cent of all the doctors in South Carolina are graduates of the Medical College there and at this particular time when the magnificent new college building is to be dedicated every alumnus of the school will surely want to be present.

It is also announced that in addition to the time honored scientific papers presented by the members of the Association there will be clinical conferences with a presentation of patients probably illustrative of the following types of cases; varicose veins, rectal cases, diabetics, and rheumatic hearts. In addition there will be a conference on sulfanilamide and perhaps some pediatric subjects will be discussed.

Members of the Association contemplating presentation of papers should write Dr.Wilson at once giving title of proposed paper with a brief abstract of the same. A meeting of the Program Committee will be held about the middle of February to decide on further details of the entire general program of the meeting. It is intended that some of the features of the round table discussions so popular in recent years will be repeated at the Charleston meeting.

The Woman's Auxiliary to the South Carolina Medical Association will put on an unusually fine program this year under the presidency of Mrs. W. B. Furman of Easley.

SOCIETY REPORTS

ANDERSON COUNTY MEDICAL SOCIETY

The Anderson County Medical Society held an interesting meeting, Wednesday, January 10, at the John C. Calhoun Hotel. Dr. Herbert Harris, the retiring President, in a few timely remarks turned over the gavel to the new President, Dr. Herbert Blake, who was for many years the efficient Secretary of the Society. Dr. Ned Camp takes over the Secretaryship.

Dr. Harris brought to the attention of the Society the interest of the civic organizations in the polio campaign and the desire to purchase an iron lung for use in any cases needing same. The Society approved of the proposition. Dr. Goodman Bare, County Health Officer, presented the new plan of the State Board of Health to furnish free antisyphilitic remedies to each member of the Society and all other qualified physicians regardless of whether the patient was indigent or not.

Dr. Edgar A. Hines of Seneca, President of the Piedmont Post Graduate Clinical Assembly, addressed the Society outlining some of the plans proposed for the next Assembly to be held in Anderson the middle of September. Dr. J. M. Feder, Director of the Pathological Laboratories of the Anderson Hospital, read an interesting paper on "Hepatic Function Tests and Evaluation of Vitamin K Therapy" (an abstract of this paper will appear in the March Journal).

Following the scientific session the Society adjourned and a delightful luncheon was enjoyed by those present at the Hotel.

OBSTETRICS AND GYNECOLOGY

J. D. GUESS, M.D., GREENVILLE, S. C.

THE BLOOD CHEMISTRY IN THE TOXEMIAS OF PREGNANCY

With the advent of any new knowledge having medical application, there is an attempt by clinicians to carry over such knowledge from the laboratory to the bedside. This being true, it was only to be expected that obstetricians should look to physiological chemistry to help to solve the numerous problems inherent in the etiology, diagnosis and treatment of the toxemias of pregnancy. That such chemical studies have helped can not be denied. However, the aid has been chiefly of a negative character, and the basic etiological factors in this group of disturbances peculiar to pregnant women still are not known, and the differential diagnosis of them still largely rests on clinical observations.

However, it is interesting to inquire into the physiochemical findings in this important group of deviations from the normal course of pregnancy, and an effort will be made to briefly summarize these and to show how little of practical value they afford the clinician.

Before proceeding with a recounting of the blood chemistry findings in these conditions, it will be necessary to outline those physiological changes in the blood which arise by reason of normal pregnancy.

The water content of the blood increases during pregnancy, but falls to normal just before labor. This increased water dilution results in a lowering of the erythrocyte count and a decrease in the hemoglobin percentage.

There is also a significant change in protein metabolism, with a resultant positive nitrogen balance, caused by nitrogen storage. This is particularly true in the second half of pregnancy.

It appears established that the non-protein nitrogen content of the blood in normal pregnant women is the same or slightly less than in normal non-pregnant women. That is about 30 milligrams per 100 cubic centimeters.

In normal non-pregnant women urea nitrogen forms approximately fifty per cent of the total non-protein nitrogen. This ratio is lower in normal pregnant women, so that urea nitrogen accounts for less than half of the total non-protein nitrogen. Several theories have been advanced to explain this fact, namely, blood dilution, decreased production of urea, and an increase in the undetermined rest nitrogen. Urea, the final product of protein decomposition is formed in the liver from the amino-acids, glycol and leucine. Tending to confirm the theory that there is lessened production of urea, is the fact that there is no marked increase in the amount of amino-acids in the blood of normal pregnant women.

The protein fractions in the blood during normal pregnancy shows a shifting of its components. There is a relative decrease in the total proteins, a progressive increase in fibrinogen, globulin and euglobulin, and a marked decrease in albumin. Serum albumin is decreased so much that its decrease accounts entirely for the decrease in total proteins.

The amounts of creatine, and of its anhydride, creatinine, and of uric acid are not significantly altered in the blood by pregnancy.

Concentration of the blood lipoids occurs in normal pregnancy so that in the latter part of pregnancy fat, lecithin and cholesterol show marked increase.

Although glycosuria is frequent in normal pregnancy, there is not a corresponding increase in the blood sugar, and the glycosuria is probably the result of a lowered renal threshold for sugar.

Probably because of a change in fat metabolism and an abnormal carbohydrate metabolism together with a deficient supply of carbohydrates, there is an increase in acetone bodies in the blood, with a resultant tendency toward acetonuria. Further, there is an increase in lactic acid. Lactic acid is formed from carbohydrates during muscular contraction. Normally it is resynthesized in the liver to glycogen. That this resynthesization process

is not so complete is believed to be due to a slowing down of carbohydrate metabolism.

The increased concentration of acetone bodies and lactic acid in the blood of normal pregnant women has given rise to the term acidosis of pregnancy. Although there is an acidosis with a definite decrease in the carbon-dioxide combining power, it seems to be a compensated or relative one, for the pH of the blood is only slightly altered. Pregnancy incurs a great carbohydrate drain on the body. The demand for carbohydrates is possibly met in part by the conversion of fat into glycogen in the liver. Acid byproducts are so formed and these in turn use up some of the alkali reserve in the blood.

Finally a word with regard to the mineral exchange in the blood in normal pregnancy. There is a slight decrease in the blood calcium, but little alteration in the amount of organic phosphorous. There is no significant change in the sodium, potassium and magnesium content. There is likely to be a true as well as relative decrease in iron as represented in the hemoglobin.

Without critical analysis, the classification of the toxemias of pregnancy, for purposes of this discussion, will be, vomiting of pregnancy, pre-eclampsia, eclampsia, and acute yellow atrophy of the liver.

Vomiting of pregnancy may vary from very mild cases to those fatally severe. Changes in the blood chemistry which occur, appear to be dependent upon dehydration and starvation, and these are found only in the more severe cases. Disturbance of carbohydate metabolism and changes in fat metabolism incident to pregnancy are present. Because of starvation, there is a shortage of carbohydrates and increased utilization of body fat. Incomplete oxidation of fatty acids results, with a marked increase in acetone bodies in the blood stream. There is also present an increase in lactic acid. Thus in severe cases there is a great tendency toward acidosis, so that there is a marked fluctuataion in the carbon-dioxide combining power of the blood.

There is no significant change in the protein fractions, but the non-protein nitrogen is usually increased in severe cases.

The uric acid content of the blood is increased, and there is a lowering of blood chlorides, which in severe cases is significant. Blood sugar tends to remain within normal limits.

These findings have no diagnostic significance, and give no clue to etiologic factors. They are of some value in determining prognosis, and in evaluating results of treatment, the first aim of which is to combat the dehydration and acidosis.

In nephritis complicating pregnancy one would expect blood chemistry studies to be of inestimable value in diagnosis and prognosis. Such is not usually the case. Unlike nephritis not complicated by pregnancy, the diagnosis of any particular kind of nephritis is made impossible by the strain of pregnancy.

In severe nephritis with pregnancy, there occurs elevation of the total non-protein nitrogen and of urea nitrogen values, and there is often a slight increase in the uric acid content of the blood. But the absence of these increases does not exclude nephritis, for frequently these readings are normal indefinitely nephritic cases, and mild cases are often mistaken for pre-eclampsia unless the N. P. N. reading is sufficiently high to be characteristic.

A marked increase in sodium chloride may occur, and this, together with renal function tests, blood pressure, the amount of albumin in the urine, the past history and the duration of pregnancy must be relied upon to aid in making the diagnosis.

Pre-eclampsia differs from eclampsia only in that it is milder than eclampsia, and unlike the latter is not accompanied by convulsions. The blood findings are similar to those in eclampsia. Uric acid is definitely increased. The carbon-dioxide combining power is diminished in some cases. There is usually no nitrogenous retention, and the other blood constituents are within normal limits.

Eclampsia is not accompanied by distinctive blood findings, although blood chemistry may at times be a help in the diagnosis and prognosis. However, the information to be derived from chemical studies of the blood are infrequently commensurate with the expense incident to them.

Non-protein nitrogen is not usually increased, and where there occurs a significant in-

crease, it should be regarded as indicating uremia and eclampsia, the uremia resulting from destructive degenerative changes in the kidneys. The same is true with regard to blood urea nitrogen.

The outstanding features of the blood chemistry findings in eclampsia are an increase in the uric acid content and a decrease in the carbon-dioxide combining power. The blood sugar may be normal, but is usually increased, with, perhaps, relative drops shortly before the onset of a convulsion, the relative hypoglycemia of Titus. There is also a definite elevation in lactic acid, with little or no change in creatine and creatinine. Blood chlorides are usually increased, and there is a slight elevation in the phosphorous-calcium ratio with no decrease in total blood calcium. The increase in uric acid is not pathognomonic of eclampsia but it is prognostic, Williams reporting that in a series of cases those whose blood uric acid did not exceed 5.6 milligrams per 100 cubic centimeter of blood lived while all of those with a reading of 7.6 milligrams died.

Magnesium, sodium and potassium are essentially within normal limits. There is no alteration of blood lipoids. There appears to be a decided disturbance in the distribution of the protein fractions, albumin being decreased and fibrinogen increased.

That there occurs a severe acidosis in severe eclampsia is indicated by the low carbon-dioxide combining power. This may fall to as low as 12 volumes per cent. The pH of the blood may fall to 7, a point which if long sustained is incompatible with life.

There is an increase in lactic acid, possibly due to increased muscular work, to damage to liver cells, or to a disturbance of resynthesis to glycogen.

The most valuable chemical blood test in eclampsia is the carbon-dioxide combining power determination. Should this fall to 25 volumes per cent or less anti-acidosis treatment is urgently needed and the prognosis is seriously grave.

Blood chemistry studies in acute yellow atrophy of the liver have been made in too few cases to allow any general conclusions.

From this review, taken in the main from Stander's reports of his own investigations and his studies of reports from other students of the subject, it is clearly evident that blood chemistry studies are of little practical value in the practical differential diagnosis and treatment of the toxemias of pregnancy, and that they have offered no clue to their etiology. The determination of the N. P. N. in suspected nephritis and the investigation of uric acid content and the carbon-dioxide combining power in eclampsia are those of greatest potential value.

SURGERY

WM. H. PRIOLEAU, M.D., F.A.C.S., CHARLESTON, S. C.

MASSIVE PULMONARY COLLAPSE TREATED WITH ARTIFICIAL PNEUMOTHORAX

Pulmonary atelectasis is becoming more and more generally recognized as a relatively common postoperative complication. It may be of varying extent on one or both sides. No doubt when of only slight degree it is commonly overlooked. In its more extensive form it affects seriously the cardio-respiratory function. Whereas there are various etiologic factors, the underlying pathologic process is obstruction more or less complete of one or more bronchi by mucous plugs. Upon this conception has been developed methods of treatment. In the milder cases as well as in some of the more serious ones there is spontaneous recovery, often without an accurate diagnosis having been made. In some cases it is necessary that direct efforts be made to relieve the condition. Regardless of the method employed the promptness of the treatment increases its effectiveness.

Removal of the obstructing plug through a bronchoscope can be done, but this means is not generally employed due to its severity and

otherwise harmful effect upon the patient, especially in unskilled hands.

Generally successful are attempts to dislodge the plug by forcing the patient deeply and to cough. In this procedure the patient should be placed in a mild Trendelenberg position, with the affected side uppermost and inclined slightly forward. Such manipulation is naturally limited in cases of very ill patients with a long abdominal incision.

In a recent article our attention is again called to the treatment of massive pulmonary atelectasis by artificial pneumonthorax (S. Gendelman and D. Goldman, J. A. M. A. 112:2249, June 3, '39). The procedure is easy of performance and only slightly disturbing to the patient. Its rationale is based upon the fact that there is an increased negative intrapleural pressure on the affected side. This is evidenced by physical and roentgenological findings. The assumption is that the negative pressure tends to draw the obstructing plug into the bronchus. Introduction of air into the pleural cavity relieves the negative pressure, and permits of more ready dislodgement of the plug. It also affects a return of the mediastinal structures to their normal position, relieving the cardiovascular embarrassment. The authors report one case in which the relief was dramatic, though the treatment was not instituted until over 12 hours after the diagnosis had been made.

Pathological Conference, Medical College of the State of South Carolina

KENNETH M. LYNCH, M. D., PROFESSOR OF PATHOLOGY

Case of Dr. J. I. Waring
ABSTRACT NO. 394 (56605)
Oct. 6, 1939

Dr. C. E. Yeargin (Presenting case):

A two year old colored girl admitted March 3, 1939; died May 21, 1939.

History: The patient was brought to the hospital by the mother who stated that the child had had a "cold" for about one month. She coughed considerably and vomited occasionally. Swelling of the lower extremities was first noted about four days before admission. Later the face became swollen.

Past history, as obtained from mother, was not pertinent. No accurate history as to feeding and diet was obtainable.

Examination: T. 99.6 P. 104 R. 56 (on admission). A fairly well developed and fairly well nourished drowsy colored female child with edema of the lower extremities and face. Except for the latter and prominent enlargement of the tonsils, the head and neck showed no noteworthy findings. The lungs were clear to percussion and auscultation. The heart was questionably enlarged to the left, the rate rather rapid, sounds distant and of poor quality. No murmurs were heard. B. P. 104/78. The liver was palpable 2 cm. below the right costal margin. No other organs or masses were palpable. There was pitting edema of the dorsum of the feet extending to include the pretibial surfaces of the legs. Knee and ankle jerks were absent. Bones and joints showed no abnormalities.

Laboratory: Voided specimen of urine showed only an occasional pus cell on repeated examinations. Blood (3-4-39): Hb. 11 gms., W. B. C. 16,800. Polys 68%, Lymphs. 29%, Eos. 3%. (4-27-39): Hb. 9 gms. W. B. C. 13,100, Polys. 47%, Lymphs. 53%. Blood chemistry (3-4-39): Urea nitrogen 16 mgs.%, sugar 44 mgs.%, chlorides 474 mgs.%, cholesterol 166 mgs.%, serum ca. 9.8 mgs.% serum P. 3.4mgs%, serum alb. 3.01 gms.%, serum glob. 2.80 gms.%. Total 5.81 gms.% (3-13-39): serum alb. 4.04 gms.%, serum glob. 3.23 gms.%. Total 7.27 gms.%. X-ray (3-13-39): Considerable cardiac enlargement to the right and left. Moderate pulmonary congestion.

Course: Urinary output was suppressed during the first part of the hospital course. Transient improvement and loss of edema on bed rest and high protein and high vitamin diet. Temperature elevation was intermittent during the first part of the course. Later developed otitis media. Temperature elevation became more remittent in type during latter part of hospital course. The liver remained palpable and shifting dullness of the abdomen was elicited from time to time. Later became othopneic; cough persisted and became progressively worse; edema reappeared and was followed by a terminal rise in temperature. Patient expired May 21, 1939.

Dr. J. I. Waring (conducting): Does anyone wish to volunteer to discuss this case? Mr. Eggleston, will you discuss the case?

Student Eggleston: Several features stand out in the history, physical examination, laboratory findings and clinical course. A two year old child with a history of protracted infection, edema and no adequate history of feedings, as to the adequacy of the diet, are significant historical features. The cardiac

enlargement, enlargement of liver, elevation of blood pressure, poor quality of heart sounds, dependent and facial edema and absence of reflexes are pertinent physical findings. These tend to emphasize the cardiac background of the case. The negative urine examination and the insignificiant degree of Urea N. retention tend to rule out kidney disease as the primary factor for consideration. The low blood sugar is not readily explainable. Of the several conditions to be considered, vitamin B_1 deficiency seems to come closer to explaining the majority of the clinical features of this case. The paradox that the child appeared well nourished might be only apparent, the edema accounting for this appearance of well being. The seven proteins are depressed and might explain the edema. The cough is explainable on the basis of pulmonary congestion. Polyneuritis, as described for vitamin B_1 deficiency, is not always seen in children. Cardiac hypertrophy, of the type seen in this case, is a common finding. The enlargement of the liver, like the congestion of the lungs, is another sign of heart failure. The edema might be due to one or more of several factors, such as, the failing heart, the supposed vitamin deficiency or low serum proteins on the basis of dietary deficiency. The suppressed urinary output may be due to any of the possible factors behind the edema; this is often seen in vitamin B_1 deficiency associated with edema. Usually cases of vitamin B_1 deficiency will respond to adequate replacement of this missing factor. The failure to do so is often associated with some intercurrent infection, such as, in this case. The otitis media in this case might have been predisposed to by the state of lowered resistence due to the vitamin deficiency. Hypoactive deep reflexes are often found in vitamin B_1 deficiency.

Rheumatic fever is not common in this age group. No cardiac murmurs were heard which is further evidence against a rheumatic background for the cardiac failure. Nephritis is not borne out by the urinary findings. Therefore, I believe that vitamin B_1 deficiency is the most likely diagnosis.

Dr. J. I. Waring (conducting): Mr. Eggleston has given us a rather full discussion of the case. Mr. Maguire, can you add anything to the discussion?

Student Maguire: I have nothing to add to Mr. Eggleston's discussion. I, too, believe that vitamin B_1 deficiency is the most likely explanation. Nephrosis, as an explanation for the edema, might be mentioned in the differential diagnosis. However, I feel that it is adequately ruled out by the urinary findings.

Dr. J. I. Waring (conducting): Is there any other type of cardiac condition that might fit this picture?

Student Maguire: Congenital heart disease could be considered. This can apparently be ruled out by the absence of murmurs. One would also have to think of pericarditis with effusion. However, there is no history of antecedent infection in this case that would point to the possibility of a pericarditis. Furthermore, this possibility is not borne out by the X-ray examination of the chest.

Dr. J. I. Waring (conducting): What would you expect to find abnormal in the EKG of a nutritional type of heart?

Student Maguire: I would expect to find low voltage and increase in the QRS interval.

Dr. J. I. Waring (conducting): The odd thing about the EKG in this case is that the findings tended to indicate improvement as the patient became progressively worse clinically. Is there any further discussion of the case?

Dr. Boone: I should like to say for the benefit of the students, and particularly those who have expressed their views, that in this case, neither the age of the patient nor the absence of murmurs will rule our rheumatic heart disease. In fact, there is nothing given in this clinical record that would absolutely rule out rheumatic heart disease. The absence of a history of satisfactory dietary intake is probably the outstanding point for considering the possibility of a nutritional type of heart.

Dr. Kelley: I can't understand the explanation of the fever in this case as being explanable on the basis of a nutritional disturbance. If this is not rheumatic heart disease, it is nutritional heart disease plus some infectious state.

Dr. J. I. Waring (conducting): Is there anything further? Dr. Wilson, do you care to add anything? If not, we are ready to hear Dr. Lynch's discussion of the pathological findings in this case.

Dr. Lynch: Apparently this is the type case we know as beriberi heart. In examining the specimen we have to illustrate the pathological conference cases, we want you to get a good mental picture of the actual pathology at hand. (Demonstrating the heart). In this heart there is hypertrophy and dilatation of both sides. I believe that it is generally conceded that in beriberi the enlargement is more marked on the right. From what we have seen of hearts of this type, particularly in infants and young children, I do not believe that it can be set down that the enlargement must be preponderantly right-sided.

Intercurrent infections are apt to occur during the course of such cases. In this case we have lobular pneumonia and acute colitis in addition to the otitis media. This child appeared to be getting well but finally succumbed to the bronchopneumonia. Such a course of events is apt to occur in cases that are on the road to recovery. The question of vitamin deficiency in these cases is an obscure one. We often wonder how much of the disease state is due to vitamin deficiency and how much is due to protein deficiency. Another pertinent question, and one whose answer is equally obscure, is, what causes the cardiac hypertrophy? Many theories have been advanced to explain this feature of vitamin B_1 deficiency but none appears sufficiently plausible to be satisfactory. We just do not know the explanation of this relationship.

If it hadn't been for the intercurrent infections,

there should have been a return to normal when an adequate diet was supplied. We wonder why there was some response and yet failure of complete recovery. It seems to be in the effects produced by the intercurrent infections; these must always be considered. In regard to the apparent state of nutrition in this case, I would say that babies may practically starve to death, yet appear fat. That means lack of other dietary essentials than those which produce fat. The persistence of the edema in this case was probably on the basis of cardiac failure since protein, in abundance, was supplied in the diet.

No one mentioned idiopathic hypertrophy, a condition that is recorded in the current literature as being one the states to be considered in such a case. I know nothing whatsoever about its explanation. I would surmise that it is a condition such as depicted by this case under discussion. In other words, probably nothing more than a manifestation of a deficiency state. Hypertrophy simply doesn't appear without cause.

Dr. J. I. Waring (conducting): I might say in closing, that the nurses on the pediatrics ward suspected whooping cough in this case because of the severity and paroxysmal character of the cough and the associated vomiting. However, the staff, in their observation, were never able to feel sure of the existence of such. It is true that the high percentage of lymphocytes in the blood was suggestive. I, too, have been at a loss to explain the persistent down hill course, with intercurrent infections, in spite of the restoration of dietary deficiences. We considered the apparent adequate nutritional state of this patient as an unhealthy edema from the very beginning of her hospital course, (Demonstrating X-ray film of chest). The cardiac enlargement is quite apparent from this plate, as you can all see.

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*"Treatment of Acute Anterior Urethritis with Silver Picrate," Knight and Shelanski, AMERICAN JOURNAL OF SYPHILIS, GONORRHEA AND VENEREAL DISEASES, Vol. 23, No. 2, pages 201-206, March, 1939.

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BOOK REVIEWS

ENDOCRINOLOGY IN MODERN PRACTICE: By William Wolf, M. D., M. S., Ph.D., Endocrinologist to the French Hospital. Attending Endocrinologist, Misericordia Hospital, New York City. Second Edition. Completely Revised. 1077 pages with 176 illustrations. Cloth, $10.00 net. W. B. Saunders Co., Philadelphia and London. 1939.

Endocrinology has been a most fascinating entity both to the public and to the doctor. The medical visitor to any large medical convention has but to step into the section devoted to this subject and look around at the audience to realize the intense interest in the papers presented along this line. Then the vast literature and special journals and books coming from the press all indicate the trend. This book has now reached the second edition and has reached large proportions. The section on physiology is naturally an important part of the volume. The illustrations always of great teaching value in these disorders are fairly numerous. The book would appear to be a comprehensive presentation of the whole subject.

MODERN CLINICAL PSYCHIATRY: By Arthur P. Noyes, M. D., Superintendent, Norristown State Hospital, Norristown, Pa. Second Edition. Rewritten and Enlarged. 570 pages. W. B. Saunders Co., Philadelphia and London. 1939. Cloth, $5.00 net.

The tendency is for psychiatry to cooperate much more intimately with general medicine than was perhaps the case a quarter of a century ago. Many diseased conditions that were considered hopeless at that time have now been classified as being amenable to great improvement by modern treatment either on the part of the general practitioner or by the specialist. The general man faces almost daily the psychoneuroses and the border line mental deficiencies. A considerable part of the book has been devoted to these maladies. A very good section indeed is that describing the examination of the patient. The later developments of the shock treatment of major psychoses is described. On the whole the book would seem to be very practical for the physician to have available.

NUTRITION AND DIET IN HEALTH AND DISEASE: By James S. McLester, M. D., Professor of Medicine, University of Alabama, Birmingham, Ala. Third Edition. Entirely rewritten. 838 pages. Cloth, $8.00. W. B. Saunders Co., Philadelphia and London. 1939.

This is one of the splendid contributions of a southern doctor well known in South Carolina and throughout the nation and who was recently President of the American Medical Association. The whole subject of nutrition is of extreme importance to the South and it is most fortunate that the author has undertaken an authoritative presentation of the subject and is keeping his book up to date by entirely rewriting this the third edition. He has not hesitated to call on some of the most famous teachers to collaborate with him. Dr. Jeans, Professor of Pediatrics at the State University of Iowa, writes the chapter on The Feeding of Infants. Dr. Dean Lewis, Professor of Surgery at Johns Hopkins. writes on feeding the surgical patient. Allergy comes in for due consideration as does endocrine disorders. The entire book is a significant contribution in which every human being must necessarily be concerned with.

ANEMIA IN PRACTICE: By William P. Murphy, A. B., M. D., Associate in Medicine, Harvard Medical School; Senior Associate in Medicine, Peter Bent Brigham Hospital, Boston. 344 pages with 41 illustrations. Cloth, $5.00 net. W. B. Saunders Co., Philadelphia, 1939.

From Boston one of the great medical centers of the world comes this contribution to the fascinating subject of the anemias. The extraordinary research work of Minot and others in Boston is known throughout the world and the author of this book enjoyed a close association with these investigators. From the earliest times the medical profession has been concerned with the anemias and Chapter IV gives an historical resume of these studies. The illustrations add much to the value of the book. The treatment of the Anemias particularly liver therapy has been carefully considered and there is an excellent chapter on the General Management of the Patient. Loboratory procedures and the transfusion of blood are also interestingly discussed.

A TEXTBOOK OF CLINICAL NEUROLOGY: By Israel S. Wechsler, M. D., Professor of Clinical Neurology, Columbia University, New York, Neurologist, The Mount Sinai Hospital. Fourth Edition Revised. 844 pages with 162 illustrations. Cloth $7.00 net. W. B. Saunders Co., Philadelphia and London. 1939.

The author states that while it has taken a great many years for the greatest discoveries in medicine to be completed yet progress in medicine has been made by small contributions from year to year. Since the first edition of this book came off the press four years ago a number of advances have occurred in neurology which called for revision of the text book in order to keep it abreast of the times. The author has kept to the original intent of maintaining the textbook as a rich repository of clinical neurology but has added the results of recent studies and in-

corporated important observations. Some of the latest of these included in this fourth edition are the smell tests of Elsberg, a brief description of the carotid sinus syndrome, a word about petrositis, remarks on the premotor syndrome and on electroencephalography in relation to epilepsy, and he has in general discussed such syndromes which have either been left out of the previous editions or have lately become worthy of inclusion.

MEDICAL JURISPRUDENCE AND TOXICOLOGY: By William D. McNally, A. B., M. D., Assistant Professor of Medicine & Lecturer in Toxicology, Rush Medical College, University of Chicago. 386 pages with 23 illustrations. Cloth, $3.75 net. W. B. Saunders Co., Philadelphia and London. 1939.

This book is somewhat of a manual condensed from the author's larger book on toxicology. The author however has enlarged the idea and given tests for some of the common poisons stressing some of the industrial poisons. There is a chapter giving some of the details in regard to the medical witness in court.

ACCEPTED FOODS AND THEIR NUTRITIONAL SIGNIFICANCE. Containing Descriptions of the Products Which Stand Accepted by the Council on Foods of the American Medical Association on September 1, 1939. American Medical Asso., 535 North Dearborn St., Chicago, Ill.

This is one of the most interesting and worthwhile books ever published by the American Medical Association and particularly so since at the moment most of the countries of the world due to war time conditions are putting into effect some form of food regulation. The plan of the Council on foods follows somewhat that of the Council on Pharmacy and Chemistry which is now world famous. The investigation of foods started in a small way through the work of a special committee but the interest became so acute that a separate Council on Foods was established in 1936 consisting of twelve persons, all of national reputation in their respective specialties as will be noted by their names. Dr. Morris Fishbein is the Chairman of the Committee. Other members are Bing, Cowgill, Jeans, Ladd, Lewis, McLester, McQuarrie, Roberts, Rose, Spies and Wilder. Of course there is a cordial cooperation with the Federal Government and the laws on foods. The book contains a great deal of practical information not only for physicians but for the general public. Everybody wants to know something about vitamins and here is a very clear cut resume of them. Nearly every doctor prescribes fruit juices daily and fruit products of all kinds. A large section of the book is taken up with a description of these products. A considerable section is devoted to infant foods and a very large section to milk and milk products. Then there are foods for special dietetic purposes and finally miscellaneous foods. Under this latter head the story of coffee, tea and similar products is quite interesting. Of course the Council cannot cover the whole field of foods but they have done a vast amount of work in that direction and this first volume of four hundred and ninety two pages is certainly a highly commendable book.

TUMORS OF THE HANDS AND FEET: By George T. Pack, B. S., M. D., F. A. C. S., Assistant Clinical Professor of Surgery, Yale University School of Medicine and Cornell University College of Medicine. Price $3.00. C. V. Mosby Co., St. Louis, Mo.

The symposium which comprises the subject matter of this small book originally appeared in the January, 1939, issue of Surgery. This is the first book on this subject ever to come to the reviewer's desk and it is amazing how much information can be brought together on this subject in one hundred and thirty-eight pages. The illustrations add greatly to the value of the book for many of them exhibit rare conditions. It is extremely interesting to know how many and varied are the pathological conditions found in the nail bed. Carcinoma by no means spares the hands and feet. Angiomatous tumors have been given due consideration along with a number of other diseases.

CLINICAL BIOCHEMISTRY: By Abraham Cantarow, M. D., Associate Professor of Medicine, Jefferson Medical College and Max Trumper, Ph.D., Clinical Chemist and Toxicologist. With a foreword by Hobart A. Reimann, M. D., Professor of Medicine, Jefferson Medical College. Second Edition. Revised. 666 pages. Philadelphia and London. W. B. Saunders Co. 1939. Cloth, $6.00 net.

The whole subject of Biochemistry becomes more and more important each year and spectacular results of research are of almost daily occurrence. Nearly every doctor must consider the clinical applications of this knowledge and hence this volume is a valuable contribution for the busy physician to have on his desk. The title of the book has been changed from "Biochemistry in Internal Medicine" to "Clinical Biochemistry" in this second edition. Each chapter has been rewritten or greatly revised. New chapters have been added as follows: Influence of the anterior hypophysis, adrenal cortex and Vitamin B on carbohydrates metabolism; Serum phosphatase activity; Uremia; Water balance, edema and dehydration; Iodine metabolism; Sodium and postassium metabolism; Iron metabolism; Magnesium metabolism; Chemistry of bile and Practical biochemical aspects of vitamin deficiency.

TREATMENT IN GENERAL PRACTICE. THE MANAGEMENT OF SOME MAJOR MEDICAL DISORDERS. Two Volumes. Price $7.50. Little, Brown & Company, 34 Beacon St., Boston, Mass.

Dr. Reginald Fitz, of Boston, one of the most distinguished internists in America, has written the

preface for these two volumes. According to Dr. Fitz's statement, the British Medical Journal published a series of articles on treatment, each written by a well known clinical teacher thoroughly familiar with his subject. This series was later published in book form in England and is now made available to the medical profession in the United States through a publishing press in our own country. Dr. Fitz further states that Dr. Hugh Clegg, who is largely responsible for the general plan of developing these volumes kept in mind two guiding principles, first, to make the series practical above all things, and second, to convey the teaching in clear-cut shape, even to the point of dogmatism. The various contributors have done their best to describe treatment of various diseases, clearly, simply, dogmatically, and in detail and one obtains in these books a panorama of current therapeutics as therapeutics are carried out in the British Isles.

PRACTICE OF MEDICINE: By Jonathan Campbell Meaking. Second Edition. 1413 pages. 521 illustrations. 43 plates in colors. Price $12.50, C. V. Mosby Co., St. Louis, Mo.

A review of this splendid single volume appeared in the Journal when the first edition was issued and at that time it was noted that the author had made a departure from ordinary single volume text books on practice by including a much larger number of illustrations than perhaps any other author had attempted hitherto. This feature has been enlarged upon in the revised edition. Of course it is now conceded to be impossible to cover the whole field of internal medicine in any single volume but in this instance the author has covered most of the more important diseases and their treatment. Under the head of treatment the author has endeavored to present the measures he has found to be of value in his own experience rather than a large number of compilations from other authorities. The book is attractive from every standpoint.

CLINICAL LABORATORY METHODS AND DIAGNOSIS: By R. B. H. Gradwohl. A combined textbook on Hematology, Blood Chemistry, Parasitology, and Tropical Medicine. Second Edition. 1607 pages, 492 illustrations, 44 full color plates. Price $12.50. C. V. Mosby Co., St. Louis, Mo.

This volume comes from one of the widely known contributors to laboratory technique and a master of one of the largest schools of training laboratory workers in this country. It is a book of about a thousand pages and goes far beyond the ordinary simple manuals of which so many have been published in recent years and to that extent will be found very helpful as a reference work.

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NEWS ITEMS

Dr. W. Cyril O'Driscoll, of the Medical College of the State of South Carolina, Charleston, S. C., delivered a lecture on Pre-Medical Education to the members of the Pre-Medical Society of the Citadel at their January meeting. Dr. O'Driscoll stressed the value of the study of arts in preparing for the study of medicine. He urged the pre-med students of the Citadel to take as many arts courses as possible.

Dr. and Mrs. Curran B. Earle of Greenville left Monday, January 29, for New York to meet their daughter, Mrs. Harry Kaminer who is arriving from Brazil early in February for several months stay with her parents. While in New York, Dr. and Mrs. Earle will be with their other daughter, Mrs. Claiborn Carr, the former Miss Curran Earle.

Dr. E. W. Carpenter of Greenville was elected President of the South Carolina Society of Ophthalmology and Otolaryngology at its annual meeting held in Columbia, November 7. Dr. Martin Cook of Spartanburg was elected Vice President and Dr. J. W. Jervey, Jr., reelected Secretary-Treasurer.

The Presbyterian Church at Sumter, S. C., was the scene of a beautiful and impressive wedding, Tuesday evening, November 14, when Miss Addie Kathryn Lemmon only daughter of Dr. and Mrs. Charles James Lemmon, became the bride of Wortham Wyate Dibble of Orangeburg and Columbia. The Reverend John M. Wells, pastor of the bride, officiated using the impressive ring ceremony. The church was artistically decorated with white chrysanthemums and numerous cathedral tapers, Southern Smilax and Oregon fern. A lovely musical program preceded the ceremony and the couple had a large number of attendants. The bride is a graduate of Converse College where she was a member of the Sphinx Club and the Senior and Freshman orders. The groom is a graduate of The Citadel and Harvard. They will make their home in Columbia where he is connected with the engineering department of the State Highway.

Dr. Mazyck Porcher Ravenel, Professor Emeritus of Preventive Medicine at the University of Missouri and once a resident of Charleston has been presented an oil painting of himself by his former students. The painting was done in Kansas City by Albert Adams Sloan and will be formally presented later in the year. It is now on display at the medical building of the University, located in Columbia, Missouri. Dr. Ravenel was active at the University of Missouri as Professor of Medical Bacteriology and Preventive Medicine from 1914 to 1932. He is a native of Pendleton, South Carolina.

Miss Frances Farley Smith and William Robert Wallace, Jr., were married at 4:30 o'clock, Saturday afternoon, January 20, at the home of the bride's mother, Mrs. J. V. Smith in Greer. Only close relatives were present. After the wedding and an informal reception the couple took a Southern wedding trip. Mrs. Wallace, the daughter of Mrs. J. V. Smith and the late J. V. Smith, was graduated from Queens College, Charlotte, N. C. in 1937. She was a member of Kappa Delta national sorority and Alpha Kappa Gamma national leadership fraternity. Mr. Wallace, the oldest son of Dr. and Mrs. W. R. Wallace of Chester, was graduated from the Presbyterian College at Clinton in 1937. He was a member of Kappa Alpha national social fraternity. The couple will make their home in Chester where the groom is engaged in business.

The Medical Society of South Carolina (Charleston County) under the leadership of Dr. Leon Banov, Chairman of a special health committee of the Society and in cooperation with the Chamber of Commerce observed

National Social Hygiene Day on February 6. Dr. Banov credited Dr. Thomas B. Parran, Surgeon-General of the United States Public Health Service, with saving a great many American lives through his campaign to bring syphilis into the open and to treat it as a medical rather than a moral problem. This marked the third annual national recognition of the scourage of venereal diseases. The program in Charleston included special radio broadcasts and other forms of public education given by the Medical Society of South Carolina and the Chamber of Commerce's subcommittee on syphilis control.

Dr. Austin T. Moore of Columbia left January 19 to attend the meeting of the American Academy of Orthopaedic Surgeons in Boston. He was away for ten days and visited clinics in New York and Baltimore.

The Tri-State Medical Association of the Carolinas and Virginia will meet at Richmond, Virginia, February 26-27. South Carolina has the honor of having several physicians as officers. Dr. A. E. Baker, Charleston, S. C., is President of the organization. Dr. W. R. Wallace of Chester is a Vice President and Dr. W. H. Prioleau of Charleston, Dr. R. P. Finney of Spartanburg and Dr. G. R. Wilkinson of Greenville are members of the Board of Councillors.

A very interesting program has been provided. Some of the speakers and their subjects, several of which are from our own state, are as follows: Cancer As We Know it Today, Dr. A. C. Broders, Mayo Clinic, Rochester, Minn.; The Diagnosis and Dietary Management of Hyperinsulinism (Lantern Slides), Dr. Seale Harris, Harris Clinic, Birmingham, Ala.; Refrigeration of the Patient as a Means of Dealing With Cancer, Dr. Temple Fay, Temple University Medical School, Philadelphia; The Practical Application of Hepatic Function Determinations; The Prothrombin Level and Evaluation of Vitamin K Therapy, Dr. J. M. Feder, Anderson; Some Truths about Morphinism, Dr. Roy P. Finney, Spartanburg; Doing Student Health Work, Dr. Charles N. Wyatt, Greenville and Are More Folks Dying of Appendicitis, Dr. J. R. Young, Anderson.

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